PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL,

EDITED BY

THE HONORARY SECRETARIES.



JANUARY TO DECEMBER,

1870.



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1870.

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For January, 1870.

The monthly meeting of the Society was held on Wednesday, the 5th instant, at 9 P. M.

The Hon'ble J. B. Phear, Vice-President, in the chair.

The minutes of the last meeting were read and confirmed.

The receipt of the following presentations was announced :—

1. From H. Hexter, Esq., a specimen of *Chamæleo vulgaris*, obtained near Bughodeer, Grand-trunk road.

Dr. Stoliczka observed that the specimen exhibited was a very interesting one, representing a peculiar variety of *Ch. vulgaris*, not common in India.

The skin is somewhat stretched, but the total length of the specimen was certainly 12 inches, or a little more, the tail measuring slightly more than one half of it. Dr. Günther (Reptiles of India, p. 162) remarks that most of the Indian specimens are of a green colour, and Dr. Gray, in his monograph of the *Chamæleontidæ* (Proc. Zool. Soc. for 1864, p. 469) states that "the bands are in Indian specimens generally absent, though in some (specimens) clearly indicated."

The general colour of the body in the present specimen is a distinct greyish olive, having throughout a slight green tinge which, according to Mr. Hexter's account, appears to have been more prevalent, and variable in the live animal, but it faded remarkably quickly after death. Each side is marked with eight somewhat irregular orange brown cross bands; the first three bands of the fore part of the body being divided into a few spots ; above the shoulder there is a conspicuous white spot, and a broadish horizontal strip of the same colour behind the fore foot. The head above, and partially at the

sides, the greater part of the feet and three-fourths of the terminal end of the tail are bright yellow, the feet and tail being rather narrowly banded with bright orange. The upper crest of the body is grey, it slightly continues on the anterior greyish portion of the tail; the lower crest is white, and specially in front very distinctly developed. The forehead is very concave and the occipital crest high; the posterior flaps are not developed, but the orbital ridge which begins at the rostral end is very prominent, and joins the posterior end of the occipital ridge by a flexuous curve, being slightly bent downwards behind the eye, but at the same time continuous throughout. A distinctly separate low ridge runs from the end of the occipital crest to the upper posterior end of the tympanoid region; the scales on this ridge are elongately tubercular, but not much larger than those accompanying it on both sides. The scales on the gular sack are small and arranged longitudinally in two rows.

The deeply excavated forehead and the numerous cross bands distinguish the present specimen as the variety called by Dr. Gray *marmoratus*, but the author of the monograph does not state where that variety was obtained; it is certainly a peculiar one, for judging from our specimen, it does not exhibit a trace of the two longitudinal bands on the sides of the body, noted as characteristic of the typical *Ch. vulgaris* of Africa and Europe. Fitzinger applied the name *Ch. Coromandelicus* to the Indian *Chamæleon*, but the name *Ch. Ceylonicus*, Laur., used by Dr. Jerdon in his account of the species has priority (J. Asiat. Soc. B., XXII, p. 466.)

Dr. Gray (loc. cit.) however, says that "after rigorous examination and comparison," the differences existing in the European, African and Asiatic forms do not possess specific value. There can be no doubt that both forms are very similar and perhaps referable to one species only. Setting aside coloration and comparing various specimens of the Indian *Chamæleon*, it is remarkable to find that the posterior extension of the supraorbital ridge is always very distinct in them, and the same also applies to the ridge descending from the posterior end of the occipital crest downwards, while in the African form these ridges appear to be much less developed. In Geoffroy's figure of the Egyptian *Chamæleon* (Descript. scient.

de l'Egypt &c., pl. 4) those ridges are scarcely noticeable, and the second one mentioned almost entirely absent.

According to Mr. Hexter's account, the specimen submitted was obtained in the jungles near Bughodeer, and appears to be rare. The geographical distribution of the species is stated to be (among others) "India generally," but I do not know how far it extends in India northwards, for its special haunts are Ceylon and the whole of Southern India. I do not know whether it has been recorded from Central India, but in any case its occurrence so far North as the Grand trunk road deserves special notice.

2. From the Superintendent, Great Trigonometrical Survey of India,—2 copies of Report of the Operations of the Trigonometrical Survey for 1868-69.

3. From the Government of India, Foreign Department,—three Amharic MSS. from Magdala.

The Hon'ble Mr. Phear stated that the three volumes are the only ones which we possess in Amharic, and they form, therefore, a valuable acquisition to our library.

4. From the author through the Rev. C. H. Dall,—a copy of Observations on the Geology of Alaska, by W. H. Dall.

5. From the author,—a copy of a pamphlet entitled "On the Desirability of a National Institution for the Cultivation of the Sciences by the Natives of India, by Dr. Mahendralál Sircar."

6. From J. Avdall, Esq.,—a copy of Lettre d' Abgar, ou histoire de la conversion des Edesseéns, par Laboubnia, traduite sur la version Armenienne du Vme. Siecle, Venice, 1868.

7. From Allan Hume, Esq.,—one volume entitled "My Scrap Book, or Rough Notes on Indian Oology and Ornithology;" Part I., Raptores, No. 1, Calcutta, 1869.

This is an important publication on Indian Ornithology, completing in many respects Dr. Jerdon's "Birds of India."

The following gentlemen duly proposed and seconded at the last meeting were balloted for as ordinary members :—

Allan Hume, Esq., J. Wood Mason, Esq., Capt. A. G. Ross.

The following gentlemen are candidates for ballot at the next meeting :—

Badon Powell, Esq, C. S., Lahore, proposed by Colonel R. Maclagan, seconded by Mr. Thornton.

J. H. Newman, Esq., M. D., Assistant Surgeon to the Political Agency, Joudhpur, proposed by R. M. Adam, Esq., seconded by Dr. F. Stoliczka.

Fred. Wm. Alexander de Fabeck, Bengal Medical Service, Jeypore, Rajpootana; proposed by H. H. Locke, Esq., seconded by Dr. J. Anderson.

The following gentlemen have intimated their desire to withdraw from the Society,—T. E. Coxhead, Esq., W. U. Bourke, Esq., Baron O. Ernsthausen, J. A. Crawford, Esq.

The following letters were read:—

1. From John Beames, Esq., C. S.,—dated Balasore District, Camp Agarpara, December 16th, 1869.

"Enclosed (*Vide* pl. I) I send an accurate copy of an inscription I stumbled upon yesterday among the ruins of an old temple at Koparí some thirty miles south of Balasore.

"The inscription was cut on the back of a slab of grey stone, the front of which was adorned with a statuette of a divinity, resembling that of Lakshmi. I would have sent the whole thing to the Society, but the villagers appear to worship it, and went so far as to send for a Brahmin to turn the image round for me to copy the inscription!

"Perhaps Bábu Rájendralála, or some other member, would kindly favour me with a translation. The people were anxious to know what it meant, and I promised to get one of the great 'Calcutta pandits' to translate it. If it has any general interest, pray use it in your Journal."

The copy of the inscription was submitted to Bábu Rájendralála Mitra, who writes under date of 5th January, 1870, as follows:—

"The bulk of the inscription is made up of the well-known Buddhist creed *Ye dharmá hetu, &c.*, incised in the Kutila character of the 10th century. The letters are ill-formed and defective, and the spelling full of gross mistakes. The latter half of the fifth line and the whole of the sixth and seventh lines contain new matter, but the last, with the exception of the concluding two

letters, is illegible, and a lacuna, in the middle of the sixth, renders it very doubtful reading. The words *Om sarva tath-a gata hridaya* and *dharma tunga* are distinct, and they imply that for "the enhancement of virtue" (*dharma tunga*) and the delight (?) "of the hearts of all Tath-agatas" or Buddhas, the statuette was dedicated by some one. The name of the donor has been lost in the last line.

"The statuette is, of course, not of Lakshmi, but of a Buddhist divinity, probably of Máyádeví.

"The discovery of the statuette is interesting as affording a proof in support of the opinion that Balasore was once a flourishing seat of Buddhism and contained many topes and shrines of great sanctity."

2. From Mr. M. L. Forrar, C. S., dated Pertabgurh, 22nd December, 1869:—

I have been asked by a friend in England to try to find out who was the gentleman whose seal bears the following inscription—that is to say, to find out the rank he held in India, and in whose service. The seal is said to be a red cornelian in gold setting.

"Iftikhár ud daulah ihtishám ul mulk William Douglas Nix Bahádur Shahámat Jang, 1215." (Hijrí, I presume.)

Could you, or any of my fellow-members of the Society inform me?

The following papers were read:—

I.—Note on a Circle of Stones situated in the District of Eusufzye,—*by* Colonel Sir Arthur Phayre. (Abstract.)

The writer describes a stone-henge situated near Sung Butté, about fifteen miles east of Mardán, the head quarter station of the Corps of Guides, and relates several traditions regarding them.

An excellent photograph accompanies the description.

The paper and a lithograph of the stone-henge will shortly be published in the Journal.

The Hon'ble Mr. Phear observed—that stone structures similar to those described by Sir A. Phayre, were found scattered over a very large area of the earth's surface. They were often taken to be evidence of the wide spread existence of a particular race of

people, but it would probably be safer to say only, that they were indicative of a particular stage of civilization. It is curious that in Cornwall, where monolithic remains of a somewhat similar character are found, essentially the same local tradition often attaches to them as that mentioned by Sir A. Phayre, namely, that a party passing over the moor on some excursion was turned into a group of stone pillars by the evil power. Clearly the tradition belongs to a late date, when all knowledge of the purpose of the original structure was lost, and itself points to a certain ill informed stage of civilization, which looks to supernatural agency to account for anything lying outside the common experiences of life. But the community of tradition does not necessarily imply community of race in the people who give rise to it and transmit it.

Mr. Blochmann said that similar stone-henges had been alluded to as existing in Kashmír by Lt.-Col. Newall in his paper on the 'Temples of Razdán,' lately read before the Society. Col. Newall mentioned especially a place called Bhadiakul near which, as it would appear, extensive monuments exist of 'Druidical' worship from times prior to the Buddhistic Era.

Sir Richard Temple mentioned that those stone circles were found almost throughout India.

Dr. Stoliczka said that Sir John Lubbock in his last edition of the "Pre-historic times," mentions the occurrence of these stone circles throughout Asia, from the borders of Russia down to the Pacific seas. He describes and figures several of them as "sepulchral stone circles" of the so-called megalithic period.

II.—Observations on a Sanad, granted by Sháh 'Álam to Rájah Pityámbar Mitra Baháʹdúr,—*by* H. Blochmann, Esq., M. A.

I have been asked by Babu Rájendralála Mitra to exhibit a *Sanad* granted by Sháh 'Álam to Rájah Pityámbar Mitra Bahádur, one of the Bábu's ancestors.

The *Sanad* is of the kind called *Farmán i Sabtí* (فرمان ثبتي, Áín i Akbarí, p. 261, No. 2) and confers upon the Rájah 14 villages in the Parganah of Hawelí i Iláhábád, generally called Cháil, the revenue of which [villages] amounts to 21891 rupees. The grant specifies an *Altamghá* tenure for ever (*in'ám i altamghá, nasalan ba'da*

nasalin o baṭnan ba'da baṭnin) without *taçdíq o yáddásht*, or liability of keeping up a military establishment. Nor is the income liable to future taxation, on the ground that the revenue of the villages has increased. All taxes are remitted, as *peshkash, mál, jihát, faujdárí;* also *sáyir* imposts, as *qanalghah*,* *muhaççilánah, dároghánah, zábitánah* (surveying taxes), *shikár o bekár* (?), the five per cent. *muqaddamí*, and the two per cent. *qánúngoí*.

The date of the grant is 5th Jumáda II., of the 26th year, A. H. 1199, or A. D. 1784.

On the back of the grant, the following fourteen villages are specified :—

1. *Mahgánw*, the jágir of Rajah حمالي (?) Rám.
2. .... (name not legible), an *altamghá* tenure of the late Baqáullah Khán, in exchange for a *mauza'* of the name of کہنولا *K'hanwlá*.
3. *Hatwá*, held in *Altamghá* by .... *Munshi i Mustaufí*.
4. *Rasúlpúr*, the jágír of the late Bahádur 'Alí Khán.
5. *Amraul*, in the name of Amíruddín Khán, the Díwán of the Çúbah of Iláhábád.
6. *Bhimraulí (kháç)*
7. *Achharpúra Sarauli.*
8. *Bargánw.*
9. *Bahrámpúr.*
10. *Basoná.*
11. *Bak'hhálah* [or *Yak'hálah (?)*]
12. *Jagdespúr Sobhá.*
13. *Naí Saráí.*
14. *Bhálí.*

The Surveyor General's Map of the District of Allahabad for 1845, contains the names of villages Nos. 3, 4, 5, 6, 8, 10, 12, 14, of which Amraul (5), Basoná (10) and Jagdespúr (12) lie on the Jamnah, the last on the right bank, in the Parganah of Bárah. The other villages lie north and north-west of Allahabad. No. 7,

* I do not know the correct pronunciation of the (Turkish) word قنلغه. It is not given in any Dictionary or Glossary, native or European. On the fly leaf of one of my MSS. I found the remark that قنلغه is the same as the Hindí دهنيا, coriander seed. The tax on *qanalghah* is mentioned by Abul Fazl (Aín text, p. 301) as one of the *vexatious* taxes which Akbar abolished.

Achharpúr, may correspond to the *Ulcharpúr* of the map. For No. 13, *Naí Saráí*, the map has *Saráí Neem.* Instead of No. 9, *Bahrámpúr*, the map has *Ibráhímpúr* and *Ibráhímábád*, which names are often interchanged.

The right hand corner Sanad is adorned with a black seal, containing in gold the name of *Abul Muzaffar Jaláluddín Sháh 'Álam Pádisháh i Ghází*, and the words سنهٔ احد and the year 1173, [A. D. 1759], the first year of S h á h 'Á l a m's reign. The seal is surrounded by an eccentric circle, and the space between the two circumferences is filled up by fourteen small circles each containing the name of a Tímuride, from T í m ú r to 'Á l a m g í r P á d i s h á h, son of J a h á n d á r P á d i s h á h. To the left of the seal in the middle, above the grant, the name of the reigning Pádisháh is given in large *Tughrá* characters; and to the left of it, in the left hand corner of the paper, the *Sanad* itself commences with two short lines according to custom (*vide* Áín translation, p. 263.) The reverse of the Sanad contains a large ink seal with the names of *Jumlatulmulk Madárulmahám I'timáduddaulah 'Áçafjáh Burhán ul mulk, Abulmançúr Khán Çafdarjang, Shujá'uddaulah, Najíb Khán 'Áçafuddaulah Bahádur Hizbarjang, Yár i Wafádár Sipahsálár Rustam i Hind, Sháh 'Álam Pádisháh i Ghází ;* and below another ink seal containing the words *Khánahzád Khán Bahádur Fidwí i Sháh 'Álam Pádisháh i Ghází*, with the year 1188 [A. D. 1774.]

The following is the text of the *Sanad* :—

دربن وقت میمنت‌اقتران فرمان والاشان واجب‌الاذعان صادر شد که
موضع مهگانو وغیره عملهٔ پرگنه حویلي عرف چایل سرکار و صوبه الهآباد *که
مبلغ بیست و یك هزار و هشتصد و نود و یك روپیه حاصل آن است از
خالصهٔ جدید در وجه اِنعام التمغای راجه پتیامبرمتر بهادر با فرزندان بمعافیِ
تصدیق و یادداشت و توفیرآنچه از حسن تردد برجمع آن بیفزاید از ابتدای
ربیع لوي‌ئیل حسب الضمن مقرر باشد باید که فرزندان نامدار کامگار والاتبار
(princes) و وزرای ذوالاقتدار و امرای عالي‌مقدار وحکام کرام وعمال کفایت
فرجام و متصدیان مهمات دیواني و متکفلان معاملات سلطاني و جاگیرداران و
کروریان حال واستقبال ابدا ومؤبدا دراستقرار واستمرار این حکم مقدس معلی
کوشیده مواضع مرقومه را نسلا بعد نسل وبطنا بعد بطن خالدا و مخلدا
بتصرف آنها وا گذارند و از صوادم تغئیر (sic) و تبدیل مصون و محروس

* It was A k b a r who changed the name *Iláhábás*, which existed before his times, to *Iláhábád* ; *vide* Badáoní, II, p. 176, and Mr. Beames's edition of Elliot's Glossary, II, 262.

دانستە بعلت پیشکش صوبە داري و فوجداري و مال و جهات و سایر اخراجات
مثل قنلغه و محصلانه و داروغانه و ضابطانه و شکار و بیکار (؟) و دهنیمي مقدمي
و صدوئي قانونگوئي مزاحم و متعرض نشوند و از کل تکالیف دیواني و
مطالبات خاقاني معاف مرفوع القلم شمارند درین باب تاکید آکید (sic) و قدغن
مزید دانسته هرسال سند مجدد نطلبند واز یرلیغ کرامت‌تبلیغ والا تخلف
وانحراف نورزند * بتاریخ پنجم شهر جمادی الثاني سال بیست و ششم از
جلوس ابدمانوس معلي زیب تحریر یافت *

The expression *az panjsuds i rabí' i loi el*, 'from five-sixths of the month of Rabí' of the (Chagatái) year of the *Loi* (dragon)' is unclear to me, and the substitution of the clumsy cycles of the Chagatái Era for Akbar's Era, or the Hijrah, is surprising. The word *bekár* I do not understand; آکید a mistake for اکید without the *madd*, and تغئیر is a queer spelling for تغییر or merely تغیر *taghír*. I know nothing as to the validity of the Sanad.

III.—A THIRD LIST OF BENGAL ALGÆ, *determined by* Dr. G. v. Martens, *Professor of Botany in Stuttgard,—communicated through* Mr. S. Kurz.

The following is a continuation of Professor v. Martens' numerous determinations of Algæ, which I collected in the course of the last few years in the Bengal Presidency, on the Andaman islands, in Arracan, and in Burma. Two lists, containing about 20 to 25 species, have been already published in the Botanical Journal "Flora" for 1869. In submitting this third series of determinations, I have only to express my deep obligations to Prof. v. Martens for the great interest which he had taken in the study of the Bengal Algæ, and for the liberality with which he has placed the result of his examination at my disposal.

The freshwater-Algæ of Bengal, and indeed of India generally, are as yet very imperfectly known, though the number of species to be met with everywhere in our jheels, tanks, rivers, &c., appears to be a very large one. The minuteness of many forms, the care necessary in the preparation of the collected materials, and especially the great difficulty which is experienced in the determination of Freshwater-Algæ in a dried state, seem to have been the principal cause of their having been almost totally neglected by Indian

botanists, meanwhile more than 1000 species of *Musci* and *Hepaticæ* have become known from British India alone. With regard to Indian seaweeds, Prof. v. Martens' work "Die Tange der Preussischen Expedition nach Ost-Asien," contains almost all that is known about them. In a very cursory exploration of Bengal I have obtained about 40 to 50 species of fresh- and brackwater-Algæ, but this number is only a fraction of what really can be found in a country like Lower Bengal, in the flora of which the richness of water plants is the most characteristic feature. As my researches into the flora of the cryptogamic plants of Bengal, and of India generally, are now in progress, I defer for a future opportunity the communication to the Society of a systematical list, containing all that is known of Bengal Algæ.

S. KURZ.

31st December, 1869.

1.—*From the Sikkim Himalaya.*

1885.* *Oscillaria interrupta*, Martens, filis 1/1000 lin. crassis, laete aerugineis, distincte articulatis ; articulis diametro aequalibus ad duplo longioribus, punctatis, linea hyalina interruptis.—Oct. 1868. Above Senadah, 7100 feet.—Mixed with it are threads of *Oscillaria antliaria*, Mart.

1886. *Oscillaria brevis*, Kützing.—Oct. 1868, Sinchul, 7000 feet.

1887. *Spirogyra decimina*, Link.—Jellapahar, 7800 feet.

1888. *Zygnema insigne*, Kg. = *Tyndaridea insignis*, Hassal.—Between Khersiong and Senadah, 6—7000 feet.

1889. *Vaucheria*, without fructification, and, therefore, indeterminable, 7000 feet.

1890. *Scytonema aureum*, Meneghini.—Near Punkabaree, on rocks, 1500—2000 feet.

Chroolepus villosum, Kg.—Tongloo, 10,000 feet.

2. *From Lower Bengal.*

1743. *Oscillaria Juliana*, Men.—In drains at Sealdah, Calcutta.

1756. *Microcystis aeruginosa*, Kg.—Forms in May a thin superficial layer in tanks at Sibpúr near Howrah. (Formerly known only from Stuttgard, where I detected it in the Royal Gardens.)

* These and the consecutive are the current numbers of my "Cryptogamae cellulares," now amounting to more than 2600. (S. KURZ.)

1757. *Spirogyra adnata*, Link. Rajmahál hills, water fall near Sahibgunge.

1763. *Hydrocoleum heterotrichum*, Kg.—Manbhúm, Eastern Behár.

1764. *Chaetophora Indica*, Mart., globosa, majuscula, viridis; filis flaccidis, repetite dichotomis, elongatis, acuminatis; articulis diametro aequlibus vel duplo ad quadruplum longioribus, saepe obsoletis; spermatiis globosis, sessilibus.—Forms *Nostoc*-shaped chains on dead branches in rivulets, near Behárináth, Manbhúm.

1789. *Scytonema palmarum*, Mart., cespite compacto ex viridi cinereo; filis parce ramosis, subflexuosis, aequicrassis, cum vagina arcta 1/225 ad 1/200 lin. crassis, lutoolis vel sordide virescentibus, basi hyalinis; articulis diametro brevioribus, distinctis, granulatis.—Calcutta, Botanic Garden, between the old sheaths on the stems of *Phoenix sylvestris*, wherein rain-water is usually accumulating.

1794. *Synedra Ulna*, Ehrenberg, with single threads of *Oscillaria subfusca*, Vaucher.—At the waterfall near Mahárájpúr, Rajmahál hills.

1804. *Scytonema tomentosum*, Kg.—Calcutta Botanic Garden.

1882. *Palmoglœa Kurziana*, Mart., gelatinosa, late expansa, obtuse lobata, 3 ad 6 lin. crassa, olivaceo—lutescens, laevis, exsiccatione collabens rugulosa, chartae arcte adhaerens; globulis numerosis, ellipticis, 1/250 lin. longis, 1/300 lin. crassis, filis tenuissimis, hyalinis, flexuosis intertextis.—Calcutta, Botanic Garden, on brick-laid paths, during and, especially, towards the close of the rainy season.

1933 and 1883. *Spirogyra nitida*, Lk.—Northern Bengal, between Kissengunge and Titalya, frequent; also at Howrah, &c.

1893. *Zygogonium Bengalense*, Mart., filis parce ramosis, elongatis, hyalinis, articulis diametro (1/150 ad 1/125 lin.) 4- ad 8-plum longioribus; substantia gonimica in globulos fuscos bipartita; spermatiis globosis 1/80 lin. crassis.—Northern Bengal, in deep stagnant waters between Silligoree and Titalya, forming large rounded greyish cloudy masses.

1894. *Hypheothrix investiens*, Mart., strato effuso, luride olivaceo; filis internis dilute aerugineis, 1/750 lin. crassis, obsolete articulatis, torulosis, punctatis; vaginis rubescentibus, opacis, arctis, 1/500 lin. crassis.—Northern Bengal, between Silligoree and Titalya, in stagnant waters, forming a dense covering on water-plants.

More or less intermixed with the last species occur *Scytonema chlorophaeum*, K g., *β. tenuius*, M a r t., and the next one.

Allogonium depressum, M a r t., filis hyalinis, articulis diametro (1/450• lin.) 5-ad 6-plum longioribus, demum partim in globulos concatonatos lutescentes, margine hyalinos 1/125 lin. latos et 1/180 lin. tantum longos intumescentibus.

1932. *Phormidium oryzetorum*, M a r t.,* strato membranaceo, tenui, viridi; filis tenerrimis, parum flexuosis, aerugineis; articulis obsoletis, diametro (1/1800 lin.) brevioribus.—In inundated rice fields in Howrah District, Calcutta; floating.

1934. *Spirogyra elongata*, K g., occurs with the former and with *Oscillaria Grateloupii*, B o r y.

1935. *Ulothrix pectinalis*, K g., in stagnant waters and tanks in Howrah district.

1936. *Oscillaria Kurziana*, M a r t., strato tenui, saturate viridi; filis pulchre aerugineis, non granulatis; articulis diametro (1/450 lin.) aequalibus, geniculis hyalinis; apiculo attenuato, curvulo, *O. Cortianae*, P o l l i n i, affinis.—Calcutta, Botanic Garden, in shallow waters of the flower-pots, wherein water-plants are cultivated, as *Cryptocoryne*, etc., also occurring with *Navicula cryptocephala*, K g.

1937. *Cladophora Roettleri*, K g., Howrah, Aug. 1869.

1938. *Spirogyra Heeriana*, N a e g e l i, Calcutta, Aug. 1869.

IV.—ON SOME NEW OR IMPERFECTLY KNOWN INDIAN PLANTS,— by S. K u r z, Esq., (Abstract.)

This paper contains descriptions of 26 new species belonging to various families, chiefly of phanerogamic plants. Besides that varied and very important information is given regarding other Indian plants which were up to this imperfectly known, or incorrectly identified.

The paper is accompanied by two plates; on one of them three figures are given representing the distinctive characteristics in the sheaths of *Schizostachyum brachycladum*, *Zollingeri* and *longispiculatum*, considered by Col. Munro as belonging to one and the same species, but evidently distinct. On the other plate an illustration of the interesting Javanese fern *Hemionitis Zollingeri*, K u r z, is supplied.

* This is the most common Alga in Lower Bengal, covering in large spongy patches the ponds, ricefields, &c., and adding much towards a natural manure of the fields. (S. K u r z.

V.—List of birds obtained in the Khasia and North Cachar hills,—by Major H. H. Godwin-Austen, F. R. G. S., Deputy Supdt. Topograph. Survey of India. (Abstract.)

In this list Major Godwin-Austen enumerates about 200 species from the above named hills. A few new species are described, and very valuable information is recorded of many which were somewhat imperfectly known. In cases where rare birds were obtained, a description and measurements, taken from live specimens, were submitted. As regards the geographical distribution of Indian birds, the list must be looked upon as a very interesting one, for the whole of that important Indo-Chinese province is not included in Dr. Jerdon's work, though the names of the birds are mostly noticed. The author was cautious not to burden literature with new names unless sufficiently authenticated. He has given descriptions of several species which he considered may be new, and a few of these species (as a *Cypselus*, *Trochalopteron*) will be described by Dr. Jerdon.

The author further acknowledges the great assistance he has received from Dr. Jerdon personally, "who has named many doubtful species, and some that I—says the author—had been unable to identify."

V.—Note on the Kjökkenmöddings of the Andaman islands,—by Dr. F. Stoliczka.

On my recent visit to Port Blair, I was informed by Mr. Fr. Ad. de Röepstorff, Extra Asst. Supdt. at Chatham island, of the existence of several kitchen-middens in the neighbourhood of the settlement. The same officer also shewed me a great number of shells and fragments of pottery which he lately obtained from one of the shell mounds. Being personally acquainted with the numerous Kjökkenmöddings on the Danish coast, Mr. Röepstorff readily recognised the identity of both these formations; and the importance of their being subjected to a careful search. I was naturally very desirous to examine some of these mounds, but as my stay was to be only a very short one, Mr. Röepstorff suggested that I should visit a place near Chatham island, the so called Hope Town, and very kindly offered to accompany me to the exact locality which he had previously seen.

Hope Town is a small convict settlement in a shallow bay, north of Chatham island. The inner edge of the Bay is occupied by a mangrove swamp, and in the eastern corner of it, we met with the first shell mound, just behind the mangrove swamp, and at the bank of a small fresh water stream. This Kjökkenmödding, evidently of a somewhat round circumference, was about 60 feet in diameter, and some 12 feet in height, but nearly half of it had been used in making a road which leads close by. This was, in some respects, welcome, because it saved a good deal of digging.

The mound itself does not present anything extraordinary, it is a simple accumulation of shells intermixed with a great number of bones of the Andaman pig, *Sus Andemanensis*, fragments of rude pottery, and numerous stones varying in shape and size, —such as a Kjökkenmödding near Copenhagen or any other place in Denmark can be observed. A few large trees growing on it indicate that it could not have been much disturbed, at least during the last two or three decenniums.

1. We examined the mound all round and dug up a portion of it, in order to see what kind of shells prevail, and which of them principally served as food to the inhabitants. The most common species appeared to be *Trochus Niloticus*, *Pteroceras chiragra* and *lambis*, *Turbo (Senectus) articulatus*, *Murex adustus* and *anguliferus*, *Nerita albicilla*, *polita*, *Georgina* and *exuvia &c.* The *Neritæ* especially were very numerous; and the last two are mostly found on the branches and roots of the mangrove vegetation close by. Among the first named Gastropods, the specimens of *Trochus*, *Pteroceras*, *Murex* &c., &c., chiefly were of very large size, not many were half grown. Pelecypoda (or Bivalves), as *Spondylus aurantius*, *Arca scapha* and *fasciata*, *Tridacna gigas* and *squamosa*, *Capsa deflorata*, *Paphia glabrata*, &c., &c., are not uncommon, but still far less numerous than the Gastropods. Of *Ostrea crista galli*, Lam., a species of quite an ancient type and very closely allied to the jurassic *O. Marshii*, Sow., or *flabelloides*, Lam., I have also obtained several valves, and this is one of the very few species which now appears to be raro in the harbour, for I have observed scarcely any live specimen during my stay, while

at the Nicobars I found it to be common. *Spondylus aurantius* is also a rare shell now. All the other species of Molluscs above enumerated, and many others not particularly alluded to, occur in large quantities on the neighbouring coral-reefs, from which they evidently were obtained, with the exception of the *Neritae* which, as already noted, are generally found on the mangrove vegetation. Of land-shells *Cyclophorus foliaceus* and *Spiraxis Haughtoni*, both extremely common in the jungles all round, were also numerous, and evidently formed an article of food.

Looking at the shell fauna, there is no difference to be observed in the size of the specimens found in the Kjökkenmödding and those at present occurring near the islands. The *Trochi* generally have the top part of the shell broken off, the specimens of *Pteroceras* and *Murex* are broken on the back of the last whorl, where the shell is thin, and other species of Gastropods have been treated in a similar, or slightly different, manner, in order to facilitate the extraction of the fleshy portion of the animal. The valves of Pelecypoda are simply opened, but as already mentioned, they are not equally numerous. Thick shells like *Tridacnæ*, and others, like *Ostreæ* and *Spondyli* which live more or less firmly attached to rocks or corals, are not so easily obtained as Gastropods; and if obtained, the valves are sometimes opened only with the greatest difficulty during the life of the animal. Species of *Pinnæ* for instance, which are easily procured and posses a thin shell, but contain comparatively very little fleshy substance, are hardly represented in the mound! This shews that the Andamanese made, if possible, a judicious selection from the scanty materials available for their table.

2. The large number of bones of the Andaman pig is remarkable. A complete skull obtained from the mound did not exhibit any difference from the living animal, it belonged though to a very small but not a young specimen. Several of the thicker bones which contained marrow, were split and broken up in the usual manner, as has been the practice with ancient people in Europe and elsewhere. I have not observed any other kind of bones of fishes or birds, but they may occur.

3. The fragments of pottery are of a rather thin kind; on the surface roughly grooved or striated, and indicate by their form that

they were derived from cup-shaped vessels of a very simple construction. The scratches or grooves on both the inner and outer surfaces are very dense, crossing each other irregularly; they are mostly straight, and have apparently been made by an obtuse point of a shell or a stone. The material is common clay, mixed with a little sand* and very imperfectly moulded, as seen by the irregular fracture. No potter's wheel has evidently been applied, and the vessels were not burnt but only baked in the sun. On a few of the fragments, which appear to be from near the upper peripherical edge of the pot, a few curved lines are to be observed, but on the whole they are very rudely and irregularly executed.

Regarding the form of the pottery itself, the question was very soon settled. For, on visiting on the subsequent morning, the North Bay with the object of examining a recently made settlement, or rather a small camp, of the Andamanese, Mr. Röepstorff found in the jungle, not far from the deserted camp, a large pot which must have been in use only a short time previous. This pot is of a simple cup-form,† rounded below, about 10 inches high, and with a diameter of about 11 inches at the outer margin. The thickness of the material varies from ¼ to ½ of an inch; the inner and outer surface is marked with irregular grooves, the perpendicular ones being much more distant than the horizontal. Fragments of this pot are not distinguishable from those found in the shell mounds. The only fire-place near the camp was indicated by a few scattered stones, rather inconvenient for such a kind of cooking pot!

It is not even certain, whether this rude kind of pottery is generally used by the Andamanese, for I have been informed that in some parts of the island their only cooking utensils are large specimens of *Turbo marmoratus*, valves of *Tridacna gigas* and others.

In submitting the rude fragments of pottery, previously mentioned, to an archæologist in Europe, no one would long hesitate in referring them to the stone age, at least to the neolithic period; for, indeed, they are almost identical with the fragments of pottery found in the Danish kitchen middens, though here fragments of pottery are comparatively very rare.

* Derived from the decomposition of tertiary sandstone.

† That no improvement in this very simple kind of pottery has taken place is remarkable, for the Nicobarese are well known to possess good pottery, carrying on a regular trade with it between their different islands.

It is one of the great characteristics of the stone age pottery, that only straight marks, made with the nail, or a piece of shell or stone, are seen on them; irregular curved lines sometimes occur in the neolithic period, or the later stone age; circles and regular curved lines are added to those simplest ornaments during the bronze age, and figures of animals, &c. &c., appear in addition to the former in the iron age.—Thus we may say that we have on the Andamanese potteries patterns represented, which were used in Europe during the neolithic period.

4. The fourth kind of articles found in the Andamanese shell-mounds, and worthy of notice, are those of stone implements. I have already mentioned that there is a large number of stones intermixed with the other things forming the mound. Examining the broken shells and split bones, it became evident that the fractures were made with some kind of a rough instrument, for many of the shells appeared to have been hammered at for some time till they were successfully broken. There was no difficulty in finding among the stones a large number which were evidently employed as a kind of a hammer in that operation, others were much like rude hatchets, knives, &c., &c., used in being fastened to a piece of wood, or such like. It certainly appeared remarkable that nearly every second stone which was picked up, indicated that it had been used some way or other; for the fractures could not possibly be attributed to a mere weathering off the surface. Mr. Röepstorff extracted among others on the spot a beautiful polished celt of the usual trapezoid form, about 2½ inches long, laterally compressed, narrower on one end, broader on the other, and with a sharp edge ground down from either side. This specimen was indistinguishable from any of the European, or Indian celts of the so-called neolithic period.

Since this discovery, the same gentleman forwarded to me another specimen, about 3 inches long, nearly of equal breadth on both ends, and with a sharpened edge on one of them. Beside this a small, but typical, arrow head was found. All these materials are of a tertiary sandstone, which is almost the only rock to be met with in this neighbourhood of the harbour. These celts, &c., clearly indicate that they were used by the Andamanese as weapons of the chase, or as implements in opening the shells, &c., &c. They could, however,

hardly be regarded as sufficient for killing the Andamanese pig, as already pointed out by Mr. Theobald, a few years ago.* For this purpose, more effective implements of iron, such as the inhabitants use at the present date, must, no doubt, have been employed for some little time past.

To the east of Port Mouat, there is an extensive Gabbro formation, and in this nests of hornstone occur. It is probable that from this, and similar other localities, the chert chips were obtained, which Mr. Theobald *(l. cit.)* quotes as having been found by Col. Haughton in an Andamanese camp. It is only natural that the aborigines did their best to procure a better material than the sandstone which is the prevalent formation. South of Port Mouat, a small patch of a metamorphic rock occurs, and as some beds of it are rather quarzose and hard, they very likely did not remain unnoticed by the aborigines. Further examinations of the Kjökkenmöddings will, no doubt, prove successful in this respect.

Mr. Röepstorff informs me, that especially at Port Mouat there are in several places very extensive shell mounds, all in similar situations to the one I have described. In fact they are scarcely anywhere wanting near the sea shore, where there is a situable locality, with a supply of fresh water and with a coral-reef not far distant, from which shells can be obtained. Some of the mounds are still in process of increasing; for the Andamanese always return after a certain time to the same locality, and generally stop as long as the supply of shells and jungle fruits lasts; they do not appear to be very proficient in fishing, at least as far as one can judge from the population near Port Blair.

Viewing the occurrence of these Kjökkenmöddings in the light of what we already know of the very low state of civilization of the Andamanese, there could scarcely be anything very remarkable about them. They shew us that an aboriginal population† was, or still is, very largely subsiding on Molluscs which are either collected on the coral-reefs or in the jungles; that the people hunt down the pig—the only large mammal probably to be found,—extract the marrow from the bones, employ stone axes and other stone

* Vide Journal, Asiatic Society, 1862, p. 326.

† Short people with oval skulls, roundish face, not peculiarly prominent eyebrows, with hairs growing in small tufts, &c., &c.

implements as their daily utensils, that they make a kind of coarse pottery, not burning but only drying the same in the sun, that they do not appear to be acquainted with any sort of grain or other kind of cereals, &c.—However, when we come to compare these few simple facts with what we know of the Kjökkenmöddings of other parts of the world, they become of an intense interest. We could almost verbally repeat the same as the results of the many successful examinations of the Danish and other shell-mounds by Steenstrup, Worsaae, Sir J. Lubbock, Sir Ch. Lyell and many others. In Europe, especially in Denmark, some parts of Scotland, &c., we look upon the kitchen-middens as the pre-historic remains of an ancient population which has entirely disappeared; here we have exactly similar mounds formed by a population which still vigorously strives for its existence with the foreigner. It is only natural to expect, therefore, that a study of the latter will supply the most reliable data in comparing the two thoroughly allied formations, and that thus the archæologist may greatly profit from the researches of the historian.

I cannot, however, venture to enter now upon this large field of inquiry with the very scanty materials at my disposal, but I may be allowed to indicate, at least, a few points which will shew how valuable a thorough examination of the Kjökkenmöddings on the Andaman, and other similarly situated islands, can become for the study of European Archæology, and at the same time increase our knowledge of the physical changes of the islands themselves.

The kitchen-middens are always situated close to the sea shore. The occurrence of them far inland would indicate that some terrestrial changes in the islands have taken place. Mr. Kurz in his report on the Andamans, (selection of the Bengal Government 1868), drew the conclusion from the occurrence of some purely terrestrial trees in what is now a mangrove swamp, that the islands are in a sinking state. But from the account which he gives of several conglomerate banks on the western side of the islands, it is clear that the beach must have been locally raised. On some of the Nicobar islands, considerable upheavements along the sea-shore have taken place, as indicated by comparatively recently-formed strata high above the present sea level; and it is very probable that on the

Andamans oscillatory movements of the ground have taken place similar to those known from other parts of the Bengal Bay. It would be interesting to see whether and how far these changes affected the population, the history of which we have very probably to decipher from the few remains, (such as the Kjökkenmöddings), which we find on the islands, for there is, I am afraid, no chance of the discovery of many other kinds of Andamanese libraries!

Of no smaller interest will the examination of the mounds be with regard to the fauna of the islands at large. Perhaps the occurrence of other larger mammalia, than the pig, may be indicated. I have already stated that *Ostrea crista galli* and *Pectunculus aurantius* appear to be at present rare in localities, where those species seem to have been common at no distant time; the demand for the Andamanese table evidently seems to have interfered with their natural increase. A complete series of the shells occurring in the mounds,—some of which are, no doubt, of great antiquity,—may shew similar changes, as those known from the Baltic coast, where *Littorina littorea* and *Cardium edule* never reach now the size which they did, when, thousands of years ago, the ancient population lived upon them.

Again, much has been written for and against the cannibalism of the Andamanese, but direct evidence is in every case wanting. They are reported as the wildest cannibals by some of the oldest Arab merchants,* who had notice of them, while the Nicobarese (on the Lendjebâlous islands) are represented as a quiet people, who approach the foreigners' ship in small canoes, and are anxious to exchange ambergris and cocoa-nuts for iron.—If we find in the Kjökkenmöddings human bones intermixed with those of other animals, and treated in a similar manner as these, we may be permitted to say that the Andamanese were, at one time, or are up to this date, cannibals. In the Danish Kjökkenmöddings researches in this respect were unsuccessful. In fact the occurrence of human bones is there of an extreme rarity, only a few skulls which are believed to be contemporaneous with the shell-mounds having as yet been discovered.

* Géographie d'Aboulféda, &c. &c., par M. Reinaud, I, p. CDXIV. The author states that the Andamanese have no canoes; for if they had any, they would eat up all the people inhabiting the neighbouring islands.

The customs now prevalent among the Andamanese islanders, may help us to explain this scarcity of human bones during the stone-age in Europe. The reverence paid by the Andamanese to the dead seems to be the only expression which approaches to anything like a religious view. In case of death the body is buried, and after a year or so dug out, and the bones are divided among the nearest relations. If a married man, the widow, or one of the children, receives the skull, which is painted over with red earth and carried about in a net work, tied with strings round the waist or neck. For this reason it is very difficult to procure a perfect skeleton, and we can hardly expect to obtain human remains of their own tribe in the mounds.—It is just possible that similar customs may have prevailed during ancient times in Europe, for here the occurrence of human bones with implements and other remains is known to be always of extreme rarity.

The Nicobarese, (or Najbárs, as they are called by the most ancient Muhammadan travellers, *vide* Jour. Asiat. Soc., Bengal, V, p. 467), treat their dead in a very similar manner, but whether they brought this custom with them when they spread over the Nicobar islands, or whether they accepted it from the aboriginal islanders which they seem to have nearly exterminated, it is difficult to prove. I don't think there can be a doubt that the present Nicobarese are descendants of the Malays, and they certainly must have immigrated before the Muhammadan creed was spread over the neighbouring islands, which took place in Sumatra as well as in Malacca, &c. &c., before the close of the thirteenth century.* But a comparison of the present very deficient social state of the Nicobarese with the advanced political and social arrangements of the Malays on Sumatra, &c., &c., during the 11th and 12th centuries indicates that their separation is very probably of a much older date. The study of the languages† of those different insular tribes is probably best adapted in approximately deciphering the data, and I only allude to them here because the immigration of the Malay Nicobarese appears to have had a great influence upon the Andamanese themselves.

* Vide Reinaud's Géograph. d'Aboulféda, I, p. CDXXII; Marsden's History of Sumatra, p. 344, &c., &c.

† Mr. Blochmann informs me that he has not been able to find any distinct admixture of Arabic words in the Nicobarese language, judging of course from the very imperfect vocabularies we possess of it.

We know from a few scanty historical records, that the Nicobarese were eager to exchange iron for their own produce, and as their wars with the Andamanese are also alluded to, we are perhaps entitled to suppose, that the latter obtained their scanty iron implements from the former. The introduction of iron on the Andamans, seems, therefore, to be comparatively recent, and iron implements are even now scarce among the aborigines. It is in fact not known whether the use of iron has become general among all the people who inhabit the different islands of the Andaman group. The parts to the west of Port Mouat are said to be populated by particularly wild tribes, which live almost entirely secluded from the rest, and do not allow even the eastern Andamanese to approach their homes. The examination of the Kjökkenmöddings may also contribute something towards the knowledge of the time at which the Andamanese became acquainted with iron, though it is, as already alluded to, not very probable that many remains of this metal will be found. However, it may be shewn whether the people ever attempted to supply its wants by the extraction of any other metal, or whether the introduction of iron has followed immediately the stone-age.

In conclusion, I may remark that the Andamanese seem to be only a portion of a large aboriginal population, which apparently inhabited the entire tract of the islands from the most northern point of the Andamans through the Nicobars down to Sumatra and other neighbouring islands.

The accounts which we have (from Marsden's History of Sumatra, and other works on the subject) of the true aborigines of the southern islands appear to be in many respects also applicable to the Andamanese. The officers of the Danish Corvette "Galatea" in 1847, tell us, that an aboriginal tribe inhabits the interior of Great Nicobar. The people of this tribe are spoken of by the Malay. Nicobarese as perfect savages of a peculiar dark complexion. It is by no means improbable that these are the brethren of the Andamanese, for we do not need to be surprised in not finding traces of the same aborigines on the Northern Nicobar islands. These are mostly very narrow and their interior to a very large extent deprived of forest. Whether forest trees in these parts did exist, or not, seems

problematic. I should be very much inclined to believe that these northern islands were formerly, in spite of the poor soil, covered with a forest jungle, in a similar manner, as parts of them are up to the present date. When staying for a few hours* in the Nangcouri haven, I visited a place of Camorta on the western side of the harbour, where near a small deserted building, a piece of ground about a mile long had evidently been years ago cleared, the forest having been burnt down. Scarcely a single sound tree was growing on the place, but the whole was thickly covered with the same kind of rough Cyperaceous grass, which almost solely occupies the interior portions of the northern island. Looking at this state of things the idea, that the jungles on the northern islands may have been burnt down at a time, when the immigration of the Malay Nicobarese took place, in order to exterminate the aboriginal population, does not appear to be without foundation.

The President said the thanks of the meeting were due to Dr. Stoliczka for his paper. It was a very fitting pendant to the paper of Sir A. Phayre which had just been read. That brought under notice a phase of an antique civilization, which had long passed away; this dwelt upon the features of a primitive civilization, which was still in existence; for kitchen middens, undistinguishable in character from those of Europe, also appeared to be still growing under Nicobarese habits of life. There could be no inference of identity of race here. It was to be hoped that the acquirements and mode of living of the Nicobarese and Andamanese would be well studied and recorded before their present primitive condition should be altered under English influences.

* In October, 1869, Steamer Scotia, Capt. J. Avern.

LIBRARY.

The following additions have been made to the Library since the last meeting in December 1869.

*** Names of Donors in Capitals.

Presentations.

Journal Asiatique, Nos. 51, 52.—THE ASIATIC SOCIETY OF PARIS.

Proceedings of the Royal Society, No. 114.—THE ROYAL SOCIETY OF LONDON.

The Journal of the Linnean Society, Zoology, Nos. 41, 42.—THE LINNEAN SOCIETY OF LONDON.

Bulletin du Comité Agricole et Industriel de la Cochinchine, tome second, Numero 4.—THE COMMITTEE OF AGRICULTURE AND INDUSTRY OF COCHINCHINA.

Proceedings of the American Philosophical Society, No. 81.—THE AMERICAN PHILOSOPHICAL SOCIETY.

Transactions of the American Philosophical Society, Vol. XIII.—THE SAME.

Report of the British Association, 1867.—THE BRITISH ASSOCIATION.

Journal of the American Oriental Society, Vol. IX, No. 1.—THE AMERICAN ORIENTAL SOCIETY.

Zeitschrift der Deutschen Morgenländischen Gesellschaft, Band XXIII, Heft. 3.—THE GERMAN ORIENTAL SOCIETY.

Rough Notes on Indian Oology and Ornithology, by A. Hume, Part I; Raptores.—THE AUTHOR.

Notes on the Land shells of the Seychelles Islands, by G. Nevill.—THE AUTHOR.

Observations on the Geology of Allaska, by W. H. Dall.—THE AUTHOR.

The Calcutta Journal of Medicine, Vol. II.—THE EDITOR.

Professional Papers on Indian Engineering, No. 25.—THE EDITOR.

General Report on the Operations of the Great Trigonometrical Survey of India, 1868-69.—THE SUPERINTENDENT G. T. SURVEY.

Report on Public Instruction in Coorg, 1868-69.—THE GOVERNMENT OF BENGAL.

Report on the Revenue Survey Operations of the Lower Provinces, 1867-68.—THE SAME.

Report of the Administration of the North Western Provinces, 1868-69.—The Government N. W. Provinces.

Selections from the Records of Government, North Western Provinces, No. 6.—The same.

Warren's Kála Sankalitá.—The Government of Madras.

Lettre d'Abgar, ou histoire de la conversion des E'desséens, par Laboubnia, traduite sur la version Arménienne du Vme. Siecle.—J. Avdall.

Purchase.

Revue des Deux Mondes, 1st Sept. to 1st Nov.—The North British Review; Oct. 1869.—The Edinburgh Review, Oct. 1869.—The Quarterly Review, Oct. 1869.—The Westminster Review, Oct. 1869.—Revue et Magasin de Zoologie, Nos. 8 and 9.—Revue Archéologique, Nos. 9 and 10.—The Annals and Magazine of Natural History, Nos. 22 to 24.—Revue Linguistique, Oct. 1869.—The Quarterly Journal of Science, Oct. 1869.—The American Journal of Science, No. 142.—The London, Edinburgh and Dublin Philosophical Magazine, Nos. 254 to 256.—The Journal of the Chemical Society, July to Sept. 1869.—Journal des Savants, Aug. to Oct. 1869.—Comptes Rendus, Nos. 7 to 17.—Hewitson's Exotic Butterflies, parts 71 and 72.—Böhtlingk and Roth's Sanscrit Wörterbuch, 41 part.—Gould's Birds, Suppt. part 5.—Simson's India Nos. 7 to 9.—Maury's Physical Geography of the Sea.—Muir's Sanscrit Texts, Vol. I.—Commentar über das Avesta, von F. Spiegel, Vol. I.—Nature, Nos. 1 to 5.

Exchange.

The Athenæum for Sept. 1869.

PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL

FOR FEBRUARY, 1870.

The Annual meeting of the Society was held on Wednesday, the 2nd of February, 1870, at 9 o'clock P. M.

On the proposition of Mr. H. F. Blanford,

Dr. S. B. Partridge was voted to take the chair.

ANNUAL REPORT.

The Council of the Asiatic Society of Bengal, in submitting their annual report for the year ending 31st December, 1869, are glad to be able to congratulate the Society on its increasing prosperity, both as regards the accession of new members and the improved nature of its finances.

There have been in the course of the year 51 ordinary members elected, a larger number than that of any previous year. On the other hand, the Society has to deplore the loss of 7 ordinary members by death, 25 members retired, and the names of four were removed from the list, for non-compliance with the rules of the Society. This shews a total loss of 36, and leaves a net increase of 15 members.

The number of ordinary members at the close of the year was 442, of which 304 were paying and 138 absent members. In both there has been a slight increase, as compared with the past year, 1868, namely, 10 on the paying and 5 on the absent list.

The Council also satisfactorily observe that the total number of ordinary members has also steadily increased for the last ten years, as shewn in the subjoined table:

	Paying.	*Absent.*	*Total.*
1860	195	47	242
1861	225	55	280
1862	229	82	311
1863	276	79	355
1864	288	92	380
1865	267	109	376
1866	293	94	387
1867	307	109	416
1868	294	133	427
1869	304	138	412

The ordinary members the death of which the Council regret to announce are—Lieut.-Col. C. D. Newmarch, R. E; Ch. Ae. Oldham, Esq.; J. B. Nelson, Esq.; J. G. Hicks, Esq.; Rajah Satyasarána Ghoshala, C. S. I.; Bábu Saradaprasáda Mukerjé, and the Rev. M. D. C. Walters.

The healthy condition of the Society is further shewn by the marked improvement in its finances. The income of the past year has exceeded the estimate by 1208 Rupees, and in effecting a saving in the items of estimated expenditure wherever it appeared advisable to do it, the Council has now the pleasure to state that all the debts of the Society have been paid, and that a balance of 2,438 Rupees was still left to the credit of the Society at the end of the year; the reserved fund of the Society remaining the same, 2000 Rupees, as in the previous year. At the same time there is the very large amount of Rupees 8,966 still outstanding for unpaid subscriptions and sales of publications, chiefly to members.

The Council have further the satisfaction to announce the completion of the xxxviiith volume of the Journal and one volume of the Proceedings. In addition to these, the January Proceedings for the current year have been issued, and the first numbers of both parts of the Journal for 1870 are considerably advanced in the press.

Museum.

In November 1868 formal sanction was given to the transfer of the Society's Natural History and Archæological collections to the

charge of the Trustees of the Indian Museum; and the donations received by the Society in those Departments during the year have, as usually, been handed over to the same trustees. A detailed statement of these donations has been published in the December Proceedings of the past year.

Coin Cabinet.

The collection of coins has received an increase of 4 silver and 37 copper coins all which were presented to the Society.

Library.

During the year, 750 volumes or parts of volumes have been added to the library. Among the presentations of publications, the Council would specially mention those from the Vienna Academy of Science, amounting to more than 100 volumes, a large portion of them relating to meteorological study; from the Christiania University, and many other public Institutions and Societies considerable additions have also been received. Of Sanskrit and other MSS. 36 have been presented to the Society, a series of 344 MSS. has been purchased by Bábu Rájendralála Mitra, and 1 Persian MSS. has been exchanged.

At the suggestion of the library committee, a sub-committee of five members was appointed for the purpose of revising the present Catalogue of the Library. This work is now in progress, and the Council hope that they may be able to report the completion of this revision to the Society at an early date. A Maulavi has been lately appointed to check the catalogue of the Persian MSS., and a Pandita to check the Sanskrit MSS. of the Society. These arrangements when completed, will markedly increase the accessibility and consequent usefulness of our library.

A list of the Societies and other Institutions from which publications have been received in exchange for those of the Society, has been added further on. The number of corresponding Societies is a comparatively small one, but the Council confidently hope that, as soon as the catalogue of the library will be completed, it may considerably be increased, inasmuch as the interest in the publications of the Society is rapidly advancing.

Publications.

These extend over nearly 1000 pages, with 34 plates, and sever-

al illustrations printed in the text. The general classification of our publications, introduced in 1865, proved to be a marked success, and has greatly facilitated their accessibility to members and other men of science.

Eleven numbers of the Proceedings were issued, extending over 336 pages with 7 plates. Of Part I of the Journal (Philology &c.) 224 pages illustrated by 4 plates have been published in four quarterly numbers, and of Part II, (Natural Science &c.) 278 pages and 23 plates also in four quarterly numbers. Each part has been separately paged and supplied with an index &c.

In addition to these 127 pages, and a few tabular statements of records of Meteorological observations have been issued, quarterly, with the numbers of Part II.

Owing to the increased bulk of the monthly Proceedings, the Council have decided to raise the price of the same, fixing the annual subscription at 4 Rupees, and the price of each number at 8 annas.

The income from the sale of the publications has exceeded the estimate by 400 Rupees.

Bibliotheca Indica.

During 1869, twenty-three fasciculi have been issued of Oriental Works, *viz.* 14 Persian, and 9 Sanscrit.

A. Persian Works.

Of Persian works the *Muntakhabuttawáríkh* by Badáoni, and the *Sikandarnámah i Bahrí* by Nizámí have been completed. The former work was commenced in 1864, and consists of three volumes, the first of which contains the history of Sabuktigín to Humáyún, the second volume contains the history of the first 41 years of the Emperor Akbar; and the third volume contains biographical notices of poets, learned men, saints, &c., that lived in the 10th century of the Hijra. Maulawí Aghá Ahmad 'Alí, the editor of this valuable history, has added a short introduction on the life and writings of the author.

Of the latter work, the *Sikandarnámah i Bahrí*, the first fasciculus had been issued by Dr. Sprenger as far back as 1842 under the title of *Khiradnámah i Sikandarí*. The second and completing fasciculus has been edited by Maulawí Aghá Ahmad 'Alí, whose valuable Essay on the life and works of Nizámí, and the History of the

Masnawí of the Persians will shortly be issued as an Introduction to this work.

Of the Persian works in progress, Maulawís Kabíruddín and Ghulám Qádir, of the Madrasah, have edited 8 *octavo* fasc. of Kháfí Khán's History, entitled *Muntakhabul Lubáb*, and Mr. H. Blochmann has edited four *Quarto* Fasc. of his critical text of the *Áín i Akbarí*. Of the English translation of the Áín two fasciculi were issued in the course of last year.

The Council also have received Introductory Notes, and Indexes of Names and Places, to the *'Álamgírnámah* and *Pádishāhnámah*, by Maulawís 'Abdul Hai and 'Abdurrahím of the Madrasah. These indexes are now printing, and will greatly add to the value of the texts.

B. Sanscrit Works.

The most important event the Council has to record in connexion with this department of the Society, is the grant by Government of Rupees 3000 per annum for the publication of Sanskrit works. On receipt of the orders on the subject, the Philological Committee submitted, in May last, a report recommending the publication of several works of great value, and measures have since been taken to carry out their recommendation.

In the Sanskrit series, Pandit Ánandachandra Vedántavágisa has completed his edition of the *Grihya Sutra* of Asvaláyana and published two fasciculi of the *Tándya Bráhmana.* Professor Mahesachandra Nyáyaratna has issued one fasciculus each of the *Sanhitá* of the Black Yajur Veda, and of the *Mímánsá Darsana* of Jaimani with the commentary of Sávara Svámi, and Bábu Rájendralála Mitra has brought out two Nos. of the *Taittiriya Áranyaka* of the Yajur Veda. The *Tándya Bráhmana* was undertaken in May last on the recommendation of the Philological Committee. It is the largest and most important *Bráhmana* of the *Sáma Veda,* and contains the earliest speculations on the origin, nature and purport of a number of Hindu sacrifices, rites and ceremonies, interspersed with a variety of anecdotes of great interest. The book is divided into twenty-five chapters, the first three of which have been published in two fasciculi. The *Grihya Sutra* is a manual of rules and directions for the performance of domestic rites and sacrifices ac-

cording to the ordinance of the *Rig Veda.* The text is explained by a running commentary by Gárganáráyana, and the editor has appended to it an elaborate Index to the Sutras, alphabetically arranged. A short preface in Sanskrit describes the MSS. used in preparing the text for the press. Of the *Mimánsá* about one half has been printed, and the forthcoming fasciculus will complete the first volume. Protracted illness has prevented Bábu Rájendralála Mitra from completing his edition of the *Tattiríya Bráhmaṅa* and the *Áranyaka.* The texts have, however, all been printed and the necessary indexes and prefaces, ready in manuscript, will, it is hoped, be published in course of the current year.

Considerable progress has likewise been made in the collection of MSS.* and the collation of texts for the publication of several new works. Professor Rámamaya Tarkaratna has compiled an edition of the *Nrisinha Tápani* with the commentary of *Sankara Áchâryya,* after careful collation of five different codices; and Pandita Haramohun Vidyábhushana has prepared a text of the *Gopála Tápani* with the commentary of Nárayana after a comparison of seven different MSS. Carefully collated texts of the *Agni Purána,* the *Gopatha Bráhmana* of the Atharva Veda, the *Taittiríya Pratisakhya,* and the *Gobhila* and the *Látyáyana Sutras* of the Sáma Veda have also been prepared and will immediately be sent to press. Of the two Tápanis several sheets have already been printed.

In February last the Government of Bengal requested the Society to undertake the task of collecting information regarding Sanskrit MSS., extant in the country, and the scheme thereupon suggested by the Philological Committee was finally sanctioned on the 23rd of June following. Owing, however, to certain unavoidable difficulties, no steps were taken to carry out the scheme until the beginning of September when a pandita was deputed to report on the Library of the Rájá of Krishnagar. The pandita has since submitted returns of 540 MSS. not included in the Society's collection. Bábu Rájendralála Mitra, during his late sojourn in Benares, has also examined several private collections, containing altogether upwards of six thousand MSS., from which he obtained the loan of some works to be copied for Government. His notes of rare works in those

collections are now in the press, and will comprise notices of about 250 MSS.

Of works commenced during 1869, the Council have to mention the *Rubá'iyát i 'Umar i Khayyám*, and an English Translation of the *Vedánta Sutra* by Professor Banerjea. The first fasciculi of these works are shortly expected. Mr. Beames has commenced the collation of his MSS. of Chand's Epic.

The following is a detailed list of the works published during 1869.

Works completed in 1869.

Persian.

The *Muntákháb ut Tawáríkh* by *'Abdul Qádir ibn i Mulúk Shah i Badáoní*, edited by Maulawí Aghá Ahmad 'Alí, No. 161, Fasc. V, Vol. III; New Series.

The *Sikandarnámah i Bahrí* by Nizámí, edited by Maulawí Aghá Ahmad 'Alí, No. 171, Fasc. II; N. S.

Sanscrit.

The *Taittiriya Aranyaka of the Black Yajur Veda*, with the Commentary of *Sáyanácharya*, edited by Bábu Rájendralála Mitra, No. 159, 169, Fasc. VII and VIII; N. S.

2. The *Grihya Sutra of Asvaláyana* with the commentary of *Gárgya Nárayana*, edited by Anandachandra Vedántavágisa, No. 164, Fasc. IV; N. S.

Works in progress.

Persian.

The *Muntákháb ul Lubáb, by Kháfí Khán*, edited *by* Maulawís Kabíruddín Ahmad and Ghulám Qádir, Nos. 155, 156, 160, 165, 166, 167, 172, 173, Fasc. V to XII; N. S.

The *Aín i Akbarí by Abul Fazl i Mubárik i 'Allámí*, edited by H. Blochmann, M. A., Nos. 157, 162, 168, 176, Fasc. VII to X; N. S.

The *Aín i Akbarí*, English Translation, by H. Blochmann, M. A. Nos. 158 and 163, Fasc. II and III; N. S.

Sanscrit.

The *Mimánsá Darsana with the Commentary of Sávara Svámi*, edited by Pandita Moheshachandra Nyáyaratna, Nos. 154, 174, Fasc. VII and VIII; N. S.

The *Tándya Bráhmana with the Commentary of Sáyanácharya*, edited by Anandachandra Vedántavágisa, Nos. 170, 175, 177, Fasc. I, II, III; N. S.

The *Sanhitá of the Black Yajur Veda with the Commentary of Mádhavácharya*, edited by Mahesachandra Nyáyaratna, No. 221, Fasc. XXII; Old Series.

FINANCE.

Owing to the financial difficulties, brought to the notice of the Society at the last annual meeting, the Council at the beginning of 1869 again carefully discussed the several items of income, and were desirous not only to keep the expenditure within the estimated limits, but to effect if possible a saving in order to meet the heavy debt.

The following is a comparative statement of income and expenditure.

INCOME.

Heads.	*Estimate.*	*Actual.*
Admission fees,	1200	1632
Subscriptions,	9200	9180
Journal,	1200	1636
Secretary's Office,	0	8
Library,	350	752
Coin Fund,	50	0
Building,	0	0
	12,000	13,208*

EXPENDITURE.

Heads.	*Estimate.*	*Actual.* For 1869.	For previous yrs.
Journal,	5000 Rs.	3197 Rs.	3673 Rs.
Secretary's Office,	2000 ,,	2351 ,,	238 ,,
Library,	3200 ,,	2039 ,,	600 ,,
Coin Fund,	300 ,,	0000	000
Building,	800 ,,	697 ,,	000
Miscellaneous,	700 ,,	428 ,,	000
Total,	12000 Rs.	8716 Rs.	4511 Rs.
Grand Total,	12000 Rs.	13226 Rs.	

* To this has to be added the floating balance at the end of 1868, being 2,334 Rupees.

The above statements shew that almost in every instance the expectations of the Council have been realized, and that moreover the actual income exceeded the total estimate by 1208 Rupees. This excess together with the balance of 2334 Rupees to the credit of the Society at the end of 1868 and the savings effected during the year enabled the Council to pay off all the outstandings of previous years; and besides that to retain a balance of 2438 rupees in order to cover the expenditure, incurred on account of the past year, 1869.

Wherever the actual expenditure has exceeded the estimate, it was always done by a special recommendation of the Finance Committee, and subsequent order of the Council. The monthly reports of the Council, as recorded in the Proceedings of the Society, shew the various instances in which the Council deemed it necessary to incur a greater expenditure than that estimated for. The heaviest outlay is that under the head of the Journal, but is owing to the large amount paid on account of previous years' publications. The next excess is that in the Secretary's Office, and this is due to the new arrangement for the bi-monthly despatch of the Society's publications to Europe, the increase of pay granted to the cashier, and the appointment of additional officers on the establishment for the purpose of checking the catalogues of MSS. The following is an abstract of accounts for the year.

INCOME.	*Rs.*	*As.*	*P.*
Admission fees,	1632	0	0
Subscriptions,	9180	12	0
Journal,	1636	9	6
Secretary's Office,	8	13	6
Library,	752	6	0
Vested Fund,	110	0	0
General Establishments,	1	6	0
Coin Fund,	0	0	0
Orient. Publ. Fund,	429	9	9
Messrs. Williams and Norgate,	1061	7	0
Museum Catalogues,	395	13	4
Carried over, Rs.	15208	13	1

	Rs.	As.	P.
Brought forward, Rs.	15208	13	1
Miscellaneous,	15	11	0
Sundries,	540	4	9
	15,764	12	10
Balance of 1868. In the Bank of Bengal,	2261	10	9
Cash in hand,	92	9	7
Rs.	18,119	1	2

Expenditure.

	Rs.	As.	P.
Subscription,	129	0	0
Journal,	6870	7	6
Secretary's Office,	2463	13	8
Library,	2328	12	6
Vested Fund,	0	4	4
Coin Fund,	0	0	0
Building,	697	12	0
Orient. Publ. Fund,	79	3	0
Messrs. Williams and Norgate,	1481	5	6
Conservation of Sanscrit MSS.,	458	10	6
Zoological Garden,	12	0	0
Catalogue of Persian MSS.,	30	0	0
Miscellaneous,	416	5	3
Sundries,	713	6	7
	15,681	0	10
Balance In the Bank of Bengal :			
Dr. Muir's,	898	10	0
As. Society's,	1411	4	7
Cash in hand,	128	1	9
Rs.	18,119	1	2

By the death of several Members outstandings to the amount of 448 Rs. have to be written off.

The following will shew the Financial position of the Society :—

	Cash Assets.	*Outstandings.*	*Gross Assets.*	*Liabilities.*
1869	4,438	8,966	13,404	3,205

The following is their Budget for the coming year :—

INCOME.

	Rs.	As.	P.
Admission fees,	1200	0	0
Subscriptions,	9000	0	0
Publications,	1200	0	0
Library,	600	0	0
Coin Fund,	0	0	0
Building,	0	0	0
Secretary's Office,	0	0	0
	12000	0	0

EXPENDITURE.

	Rs.	As.	P.
Publications,	5000	0	0
Library,	2700	0	0
Coin Fund,	300	0	0
Building,	800	0	0
Secretary's Office,	3200	0	0
	12000	0	0

OFFICERS.

The general duties of the Secretary, including the publication of the Proceedings, during the year have been carried on by Professor Blochmann and Dr. Stoliczka. The Philological part of the Journal was edited by Mr. Blochmann and the Natural History by Dr. Stoliczka. Colonel Gastrell carried on the duties of financial Secretary until September, when on his leaving Calcutta Colonel Hyde kindly offered to accept the onorous duties of the Treasurer and retained the charge of the same to the end of the year.

The Council favourably record their satisfaction with the services of the Assistant Secretary, Bábu Pratápachandra Ghosha, B. A., and the Assistant Librarian Bábu Money Lall Bysack, who have been assiduous in the performance of their duties.

It was proposed by Mr. H. F. Blanford and seconded by Mr. D. Waldie that the report as read be adopted.—Carried unanimously.

The balloting lists of officers and members of the Council of the Society, as recommended by the Council, having been submitted the Chairman proposed, and it was agreed to that Mr. H. F. Blanford and Mr. D. Waldie act as scrutineers.

The Chairman next submitted the accounts of the Society for the past year, and proposed that Sir Richard Temple and Mr. D. Waldie be requested to act as auditors.—Carried.

The ballot having been taken the scrutineers reported that the following gentlemen have been elected officers and members of the Council of the Society for the ensuing year.

President.

The Hon'ble J. B. Phear.

Vice-Presidents.

Thomas Oldham, LL. D. | J. Fayrer, M. D., C. S. I.
Bábu Rájendralála Mitra.

Treasurer and Secretaries.

Lieut. Col. H. Hyde, R. E. (Financial Department).
H. Blochmann, M. A., (Philological Department).
F. Stoliczka, Ph. D., (Natural history Department).

Members of Council.

The Hon'ble J. B. Phear.
Thomas Oldham, LL. D.
J. Fayrer, M. D., C. S. I.
Bábu Rájendralála Mitra.
S. B. Partridge, M. D.
The Hon'ble J. P. Norman.
Lieut. Col. H. Hyde, R. E.
J. Ewart, M. D.
The Hon'ble W. Markby.
Col. H. Thuillier, R. E.
Bábu Devendra Mallik.
C. H. Tawney, M. A.
H. F. Blanford, A.R.S.M.
H. Blochmann, M. A.
F. Stoliczka, Ph. D.

List of Societies and other Institutions with which exchanges of publications have been made during 1869.

Batavia :—Société des sciences des Indes Nederlandéses.
Berlin :—Royal Academy.
Bombay :—Asiatic Society.
Boston :—Natural History Society.
Bordeaux :—Bordeaux Academy.
Brussels :—Scientific Society.
Cherbourgh :—Société Imperiale des Sciences Naturelles.
Calcutta :—Agric. and Hortic. Society of India.
——— :—Tattvavodhini Sabhá.
——— :—Geol. Surv. of India.
Christiania :—University.
Dacca :—Dacca News and Planters' Journal.
Dera :—Great Trigonometrical Survey.
Dublin :—Royal Irish Academy.
——— :—Natural History Society.
Edinburgh :—Royal Society.
Germany :—Oriental Society.
Lahore :—Agricultural Society of Punjab.
London :—Royal Society.
——— :—Royal Asiatic Society of Great Britain and Ireland.
——— :—Royal Institution.
——— :—Royal Geographical Society.
——— :—Museum of Practical Geology.
——— :—Zoological Society.
——— :—Statistical Society.
——— :—Geological Society.
——— :—Linnean Society.
——— :—Athenæum.
——— :—Anthropological Society.
Lyon :—Agricultural Society.
Madras :—Government Central Museum.
Manchester :—Literary and Philosophical Society.
Munich :—Imperial Academy.
Netherlands :—Royal Society.
New York :—Commissioners of the Department of Agriculture.
Paris :—Ethnographical Societ-
——— :—Geographical Society.

Paris :—Asiatic Society.
St. Petersburgh :—Imperial Academy of Science.
Vienna :—Imperial Academy of Science.
Washington :—Smithsonian Institution.

The chairman then read the following brief address of the President, Dr. Thomas Oldham, who has been called away from the presidency town by important official duties.

ADDRESS OF THE PRESIDENT.

GENTLEMEN OF THE ASIATIC SOCIETY,

The necessity of attending to important professional duties, at a distance from Calcutta, will, I regret to say, prevent my having the pleasure of being with you at the annual meeting of your Society. I do not, however, wish that anniversary to pass, without a few words of congratulation, and of farewell, although I cannot deliver them to you personally.

It was my duty to point out to you at the last anniversary meeting, that from the state of the finances of the Society, your Council had been compelled to insist upon the necessity for curtailing, in every possible way, the expenditure of the Society. It was even seriously in contemplation to suspend the publication of the Journal of the Society, until the finances had recovered. But, it was determined that every effort should be made in other directions, before this last act, amounting almost, as we thought, to the extinction of the Society, should be resorted to. We felt strongly also, that if the Society had failed to command the support of those interested in natural history and philological enquiries, the cause of that failure must be sought in the action of the Society itself, and must not be presumed to arise from any absence of an intelligent appreciation of the value or importance of such enquiries. This view I endeavoured to impress upon you in my brief address of last year. And I rejoice to think that the same views have guided the management of your So-

ciety during the past year. In brief, we felt that to be successful, the Society must be useful; and that to be useful, it must adopt very much the same principles of action which alone are known to succeed in other associations. Among the most important of these, punctuality in all the arrangements of the Society appeared to stand first. Punctuality in judgment, punctuality in accounts, punctuality in publications.

I need not here insist on the fact, that without a sufficient income, no Society can carry out its operations. And when, as in the Asiatic Society of Bengal, the sole source of such income is the voluntary contributions of its members, it was of the very first importance that these contributions should be promptly available for the objects to which they were to be applied. Our first efforts were, therefore, directed to endeavouring to bring in all outstanding claims of this kind, and to establish a system of more regular, and prompt collections, and payment. The result has been that your Council are able to report to you, that we have during the year 1869, received of arrears of previous years on all accounts Rs. 2,681-5-0. But we must still point to the fact, that in a similar way, *on all accounts* there was at the close of the year 1869, no less than Rs. 8,966, still due to the Society.

More than two-thirds of this large sum is made up of the admission fees, and annual contributions of members! And I cannot avoid again urging upon the members of the Society, that it is not possible for the Council of the Society, to carry into practice their ardent wishes to render the Society effective, and to do this punctually and quickly, unless they are supported by the members at large. The fact of their becoming members, I assume to be sufficient proof of their appreciation of the advantages to be gained from such association; but if this membership brings with it privileges, it also creates duties, and the obligation to fulfil their part of the contract by paying regularly the contributions, which as members they have agreed to pay, is not the least of these.

During the year just passed, there have been elections of 51 members. Against this we have lost from various causes, 36, leaving an actual addition to the list of 15 members; the total at close of 1869 being 442, as against 427, at close of 1868. But so far as income is

concerned, the liberal arrangements by which members, temporarily absent from India do not pay must be remembered, and thus out of the 442 only 304 are actually contributing. And again out of this number of 304, no less than 189 are non-resident members whose rate of contribution is only one-half that of the 115 residents.

In connection with this, I would ask the serious attention of the members to the steady growth of the Society during the last 10 years. Our total number in 1860 was only 242; the total in 1869 was 442. I consider this the most convincing proof of the justice of the views which led to the reduction of the annual contributions. And I would even go farther and express a deliberate conviction that this reduction has not yet been carried out sufficiently. I would ask the consideration of this by the incoming Council, and am satisfied that, after the collection of outstanding claims, it would be a wise policy to render the advantages of membership accessible to a wider circle than at present, by reducing the amount of annual contribution.

I shall just allude to one other point of account, which I think affords a very just source of congratulation; your Council has been enabled during the twelve months, just passed, to pay off Rs. 3,600 of old debts due by the Society. And they now come before the Society, with the satisfactory statement that there is not one single claim against the Society of any kind, or of any date, which has not been discharged. There are a few bills for the current expenditure of the *last month* of the year, including salaries of your office establishment, &c., which could not be submitted before the end of the year, when the accounts were closed, but these only amount to the sum of about 1800 rupees, and these could and would have been paid, had there been time to obtain the bills before closing the accounts. The Council now, therefore, have the gratification of handing over the management of your Society to their successors, free from debts of any kind. And with a small balance of cash in hand to carry on to the present year, a sum of 2000 rupees in Securities, and outstandings,—the greater portion, if at all, of which will be realized,—of nearly 9000 rupees. I think this result, as compared with the financial state, in which in 1868 we received the management, entitles your retiring Council to

the warmest thanks of the Society. It would be unjust did I not state that we are mainly indebted for this favourable result to your Finance Committee, who have been most earnest and punctual in their attendance, and in their efforts to bring your finances into a healthy state; and especially to your Treasurers, Colonel J. E. Gastrell, and lately to Colonel Hyde, who have spared no personal exertion to carry out the views of the Committee.

Considering this question of a healthy state of the finances of the Society, to be one affecting the very life-blood of the Association, without which even existence would be impossible, I have detained you with these few words. And I would again venture to urge, that unless supported by the members, and the prompt payment of their contributions, all the efforts of your officers will be in vain.

Coincidently with these improvements in your financial condition, I would also point to the great improvements which your Secretaries have introduced in your Journal and Proceedings. The record of each meeting of the Society during the two years just passed has been, as a rule, in the hands of the members before the next monthly meeting. The last number of the Proceedings for the past year, with Index &c., was issued early in January. The Proceedings have, as anticipated, become a very valuable, and rapid means of publication of the shorter papers, and of abstracts of the important contributions to the Society; and in itself, the volume for 1869, of nearly 300 pages with 7 plates gives an admirable summary of the labours of the Society.

The Journal, has also been punctually issued. Of each part, four numbers for the year have appeared, within twelve months. And each forms a volume of much value in itself. I may remind you that it would have been impossible to make such a statement regarding the Journal of the Society for the last 20 years certainly. I ventured in addressing you last year to insist upon the necessity of this punctuality in the appearance of the Journal, if it were to maintain its interest. Contributors of valuable papers naturally object to delay in the publication of their results, and if it be uncertain whether these will appear at all, or perhaps only after lapse of years, will certainly seek for other medium of publication. And independently of this, I would ask how long any one of us would continue to subscribe.

to a book or a daily or weekly or even monthly journal, no matter what its special subject might be, if they found that, instead of appearing at the appointed time it came at long and irregular intervals, the issue of January say, appearing in December! And it is equally so with the Journal of your Society; unless it appears regularly and at stated intervals, it will unavoidably cease to excite any interest in the subscribers.

Gentlemen, no one save those who have actually tried the experiment, can realize the difficulty, and the labour involved in the regular issue of such a publication in this country. And if I speak strongly of the obligations the Society is under to its Secretaries for this result, and for the regular issue of your Journal and Proceedings, I do so, because I can speak from personal and intimate knowledge of the exertions it has necessitated, and of the time which has been, in the midst of other and pressing duties, devoted to it. That this regularity in issue is appreciated, I have had during the year many very gratifying proofs, and only a short time since, an old and very valued contributor to the Journal, and member of the Society, in Europe, acknowledging the receipt of some parts of the Journal which were wanting to complete his series of some years since, says with earnestness: "As to 1868, I am now able to go to the Binder with everything for the year complete, long before the close of 1869, which for the Journal of the Asiatic Society of Bengal is wonderful!!" I can only express an earnest hope that the Secretaries may be enabled to maintain this regularity of issue, convinced that the members will duly appreciate the importance of their exertions. I would even venture to suggest that by alternating the appearance of the different numbers, these advantages would be even more fully secured. If the members, taking 4 numbers of each part as the regular issue for the year, or eight in all, 1 of Part I, were to appear say in February, April, July and October, and the numbers of Part II, in March, June, September, and December, the members would have a number of the Journal every six weeks or two months. Such a systematic issue, could only be maintained by having the printing and illustrations of the Journal prepared some time before the date of issue. But with the large number of

valuable papers which are now coming to the Society, there will be no difficulty in this.

I alluded last year to certain objections which had been made to the present division of the Journal, according to the subject matter of the papers published, and endeavoured to show, that this appeared to me a question which nothing but experience could answer. I think now we can come to a definite conclusion in the matter. There has been no difficulty finding good original matter for both of the divisions, and a full number of Journals have been issued, while the fact regarding the sale of these numbers are sufficient in my opinion to prove how fully the public appreciate the division. The returns of sales show the following numerical result:—

Year.	Subscribed volumes.	Double numbers.	Double numbers of previous years.	Part I, numbers of current year.	Part II, numbers, curr. year.	Double numbers, curr. year.
1860	71	13				
1861	69	15				
1862	68	15				
1863	70	30				
1864	67	34				
Division of Journal was introduced.						
1865	108		45	2	3	1
1866	113		15	0	5	3
1867	80		37	36	95	3
1868	77		38	30	64	1
1869	77		30	46	81	1

This tabular statement shews that the applications for the Journal, were in 1860 only 13, in 1864, 34, in 1865, the first year after the division was introduced 51, and in 1868, 133 and for last year 158. Now, not only does this satisfactorily shew the increasing value attached to your Journal in this country, but the separate sales of the separate parts, shew, I think, very conclusively that a considerable proportion of this increase of demand has

arisen from the increased facilities afforded by the division of the subjects treated of, to all who are more especially interested in one branch of enquiry rather than another.

Similar favorable reports of the sale of our Journal reach us from our agents at home, though we have not as yet received detailed statements of the separate applications.

I would also ask attention to the fact that during the last few years, much more has been given to the members than hitherto, while to the public the cost has been considerably reduced.

Whatever doubts therefore I have had as to the practicability of effectively maintaining this division of our Journal, have been entirely dispelled by the experience of last year, and I believe this division to be not only convenient (which was obvious) but also both practicable and profitable.

I would also ask your attention to the greatly increased interest and value of the papers published in your Journal, and to the improvement in the illustrations. That the contributions have excited much attention from the highest authorities on the subjects treated of is shewn by the criticisms on them, which have appeared in the Scientific Journals of Europe. The Society is indebted for one of the most attractive illustrations in the Journal of last year, to Mr. W. T. Blanford, who has contributed the very admirably executed coloured plate of a new species, *Trochalopteron Fairbankii,* described by himself. Indeed it has only been by similar contributions of time and labour, that under the pressure of limited resources, we have been able to produce so valuable a volume of the Journal during the year.

It had been my wish to have taken a brief retrospect of the labour of the Society during the year, but my absence for some months will preclude the possibility of this. There is one subject which has been prominently brought forward, on which I would say a few words. We have had more than one communication on the early history of the Sundarbans; and have been strenuously urged to initiate a regular examination of this wild and now uninhabitable jungle district, with a view to determine the existence, and investigate the ruins of cities said to occur, or

known to occur, within its limits. And the most terrific stories of the inroads of savage pirates, of the occurrence of tremendous gales—and awful waves carrying with them the devastation of everything, have been invited to account for the extinction of these cities, and the abandonment of the lands then under cultivation. The joint action of the Society and others has been invited to stir up the Government of the country to undertake a systematic examination of the whole area; and wonderful prospects have been held up of intending archæological discoveries to reward the risk of life and health, which such an expedition would involve. I cannot agree with these views—and for this reason, that I am compelled to view the changes which have occurred in this Sundarban tract as the necessary results of undeviating natural laws, involving nothing more than the most gradual and ordinary changes, such as are still in progress.

I suppose no one will hesitate to acknowledge that the whole of the country, including the Sundarban proper, lying between the Hughly on the west, and the Megna on the east, is only the delta caused by the deposition of the debris carried down by the rivers Ganges and Brahmaputra, and their tributaries. It is also equally well known that in such flats, the streams are constantly altering their courses, eating away on one bank and depositing on the other, until the channel in which they formerly flowed became choked up, and the water is compelled to seek another course. It is also certain that in this peculiar delta, the general course of the main waters of the Ganges has gradually tracked from the west towards the east, until of late years the larger body of the waters of the Ganges have united with those of the Brahmaputra and have together proceeded to the sea as the Megna. Every stream whether large or small, flowing through such a flat, tends to raise its own bed or channel, by the deposition of the silt and sand it holds suspended in its waters,—and by this gradual deposition the channel bed of the stream is raised above the actual level of the adjoining flats. It is impossible to suppose a river continuing to flow along the top of a raised bank, if not compelled to do so by artificial means, and the consequence of this filling in and raising of its bed, is that at the first opportunity, the stream necessarily abandons its original

course, and seeks a new channel in the lower ground adjoining— until after successive changes it has gradually wandered over the whole flat and raised the entire surface to the same general level. The same process is then repeated, new channels are cut out, and new deposits formed. Bearing these admitted principles in mind, look to the delta of the Ganges and Brahmaputra. The Ganges river emerging from its upper levels round the Rajmahal Hills, and prevented by their solid rocky barrier from cutting further to the west, sought its channel in the lower ground adjoining—and originally flowed, into the main body of its waters along the general course now indicated by the Bhaghirathi and Hughly. But gradually filling up this channel it was again compelled to seek a new course in the lower, because as yet comparatively unfilled in ground, lying to the east. And the same process being repeated it wandered successively from the rocky western limit of the delta-flat towards the eastern. If this progress eastwards was allowed to be sufficiently slow to admit of the gradual filling in of the country adjoining, the delta was formed continuously up to the same general level, and the larger streams or channels passing through this flat to the sea became unavoidably diminished in size, and in the quantity and force of the water they carried, the main body passing around further to the east, and having its course in the channels successively formed there. I need not here point out the successive stages in the formation of the delta, or shew how these have been exactly paralleled by similar changes in the course and deposits of the Brahmaputra, and the other rivers which unite with the Ganges. We are at present concerned rather with the results arising from these changes as affecting the existence and distribution of population.

The very first necessity for the existence of man is the presence of drinkable sweet water. Where this cannot be procured, it is certain that man can make no settlement,—and it is equally certain that the removal or destruction of the sources of supply of this necessary element of existence will compel him to abandon his abode, and change his habitation. We have not to go beyond the delta of the Ganges itself to see the application of these facts, in explanation of the former history of the Sandarban. The more modern course of the large rivers give us a patent illustration of

the successive conditions of all. To the east where now the great body of the waters of these rivers is discharged, we find the force of the fresh water sufficient to overcome the strength of the tide, and the influx of salt water from the sea. And down to the very mouths of the rivers here, fresh water (often for hours in the day flowing over a basis of salt water beneath) can readily be procured. The consequence is that towns and villages line the banks of every stream, and population and cultivation follow the course of this, the prime element of their existence. To the east as we have said the filling in of the Delta has not yet reached the same level as to the west, and the fresh waters here retain sufficient power, therefore to be carried down to the sea. In earlier times, precisely similar conditions must have existed further to the west; the larger portion of the river waters found their exit through the channels there, and were thus in sufficient force to be carried down to the very sea, and the natural consequences of this was, that man fixed his abode, where he could procure fresh water, towns and cities arose, and taking advantage of the great facilities for trade offered by their position, increased in importance and number, until the necessary changes in the course of the streams which supplied them deprived them of the possibility of existence. That this is the natural interpretation of the facts, appears to me abundantly evidenced by the circumstance that within this abandoned tract and in its vicinity, at the present day, when the swarming population is seeking utility for settlement in every direction, not a single spot finds its settler, save where fresh water is to be had; and the traveller may go for days or weeks through the countless anastomising creeks and channels of the tidal Sundarban, without finding a single abode, whereas the moment be reaches any spot where fresh water is obtainable, he finds cultivation spreading and the population increasing.

I alluded to the existence down to the very sea board of towns and villages along the corner of the Megna &c., where fresh water is still procurable. But I cannot shut my eyes to the consideration that in the course of time (and very probably, as I believe, in a very short time unless prevented by artificial means), these very localities must themselves be again deserted and a Sundarban tract will then be found in the eastern face of the delta, as it now is in the western.

The rooting barrier of the Tipperah hills will prevent any further extension of the delta channels to the east, and even at the present time the waters of the Megna are flowing on a raised bank, formed of its own deposits. It needs but some trifling change, as an unusually great fall of rain or flood, the accidental stranding of drift timbers or some equally trivial, or apparently trivial, cause to throw the whole body of water from its present channel to seek another and lower bed in the country to the west. And I think it requires but a very superficial examination of the ground to predict, that a very short time, comparatively speaking, must elapse before the great stream of the united waters of the Ganges and Brahmaputra will find their course to the sea through some channel to the west of the present course. The delta streams will then commence to travel back again over the flat in successive courses, tending gradually to the west, as they have now for generations been travelling towards the east. I think also that the physical outline of the country points to the fact, that for some time the main course of the rivers *must* assume, on the large scale, the course indicated now by the Gorai and Horungatta to the sea In fact the peculiar physical characteristics of the Backergunge district, in the northern portion of which especially nearly two-thirds of the surface is jheel and marsh, point to the fact that this portion of the delta was from some physical cause or other, which carried the waters past the heads of the streams flowing through, not occupied by the numerous channels of the rivers for as long a period as the districts to the west. The great depression in which this very remarkable series of jheels now lies, is as I believe, only a part of the delta which has not been filled in, by the river deposits, to the same level as the country adjoining,—and this lower level line of channel *must* be seized on by the rivers, the moment they are diverted from their present course. Indeed this diversion has commenced and the rapid enlargement of the channel of the Gorai is only the first indication of the vast changes which will result.

I will also notice that these changes cannot but be beneficial to the new port of Morellgunj: and would suggest that they should be watched with reference to their general cause, and to the wider results, rather than with a view to the preservation of any special limited locality. The time will undoubtedly come, when the larger

quantity of these great rivers will again, having filled in this great depression, tend to the west and will eventually (when, it could not be predicted) find their way to the ocean through the now nearly abandoned courses of the Bhaghirathi and Hughly.

I feel convinced, therefore, that there is no necessity to resort to any fancied effects of Cyclone-waves, of the inroads of pirates, or the persecution of other peoples, to account for the occurrence at the present time of ruins in the Sundarban. Cyclone waves, and persecution and robbery do not drive men from their abodes near the sea-board now, though they may cause vast destruction of property, and produce great suffering. Nor would these causes, as I believe, have sufficed in earlier time, to produce the same result. Doubtless they may have diminished the pang with which the settler abandoned the homes in which his family had grown round him, but unless combined with the far more general and more unavoidable compulsion of the want of water I believe that, however they may have affected individuals, they would have been powerless to induce communities to abandon positions favorable for trade, and for the acquirement of wealth.

The pressure of other duties must, Gentlemen, plead my excuse for not noticing other matters which have come up during the year. I would now only thank you for the confidence you placed in me, by confiding to me the high and respectable post of your President for the year just passed. I would thank you heartily for the kindness with which my efforts to improve and advance the interests of the Society have been received, and for the friendly support I have invariably met with. To your officers for the past year, I feel greatly and sincerely indebted for their earnest and hearty cooperation in everything tending to its benefit. If there have been failures, they have not arisen from the absence of a desire to succeed: if there have been successes, they have been the result of the united and helpful exertions of all. I am glad to be able to resign the chair to my successor, leaving him the Society free from debt, and with income properly invested, sufficient to render your Association effective and useful. I am glad also that your choice has fallen on one so much more competent,

than I have been to promote your interests. My absence from among you this evening, which necessity alone could have caused has confirmed my opinion that your President ought to be one constantly resident in Calcutta. And I look forward with great hopes to the steady progress and increased utility of the Society, under the presidency of the learned member, to whom I now resign the Chair.

Camp Chanda, January 22nd, 1870.

Before the meeting terminated it was proposed by the chairman, Dr. S. B. Partridge, and seconded by H. F. Blanford, Esq., and carried with acclamation—

That the special thanks of the Society be given to Colonel J. E. Gastrell for his very able services rendered to the Society as Treasurer for the last six years.

Ordinary Meeting for the month of February, 1870.

The meeting then resolved into an ordinary meeting—

Dr. S. B. Partridge, in the chair.

The minutes of the last meeting were read and confirmed.

The receipt of the following presentations was announced:—

1. From Colonel G. H. Saxton, Canúr,—a set of iron implements &c. found in a cromlech in the estate of Major Sweet. The following letter, dated 25th Nov., 1869, accompanied the donation.

"The accompanying were quite recently dug out from a cromlech on the estate of Major Sweet in the South side of the Nilgherry plateau. Many other things of the same description as well as some quite different, were found in the same place. Similar Cromlechs exist all over the Nilgherries, and some have been opened before this, but I believe not many. In some of those, precisely similar articles have been found, but in others the search has been fruitless, perhaps they had been previously opened. I don't know whether the Society has on record any information regarding the Nilgherry cromlechs, but I send these, hoping that some Archæologist may make them interesting by instituting enquiries, which I shall be happy to assist in, after my return to the hills in the hot season. None of the present hill tribes possess the slightest knowledge as to the origin of either

the cromlechs, or the numerous cairnes still existing. No objection is offered by the hill people to any one excavating in the Cairnes. There is, however, some superstitious dread in existence about any interference with the cromlechs. Major S w e e t personally opened this cromlech, and extracted those relics on his own property, and the only feeling shewn, appears to have been a fear, that the spirits of the bygone people, to whom these relics belong, would surely resent the sacrilege, which the present tribes would therefore not join in committing. In some instances I learn, that the Burghes have made objection to the opening of cromlechs, but never on any plea that the monument at any time appertained to the forefathers of any existing tribe.

The metal of which these implements are made appears to be generally iron and brass, but it requires examination. The earthenware chatties are all filled with earth and bones of which some are enclosed. The Todars are undoubtedly the oldest occupants of these hills, now existing. Their traditions claim for the tribe a great antiquity, and declare, that the Todars were originally created on the Nilgherries; and that the other tribes immigrated from some other country. I am not aware what evidence exists, on which to found any opinion as to the period, back to which the Todars would carry their traditions, but it seems clear that both cromlechs and cairnes are antecedent to that. On what grounds I know not, but popular belief gives from 800 to 2000 years as the age of the relics I now send. Mr. M e t z, a German Missionary who has for 25 years worked on the Nilgherries, and for that long time held intimate intercourse with the hill tribes, indeed lived with them in their villages and huts, is the only person who can be able to form any reliable opinion on this subject, and I hear that he says they *must* be 800 and *may* be 2000 years old. It is remarkable and very corroborant of great antiquity that no coin of any kind has ever been found amongst these remains of a bygone age."

The pottery, sent by Col. S a x t o n, is quite similar to that described from the Coorg Cromlechs by Dr. T. O l d h a m, in the Proceedings of the Society for August, 1869. The iron implements

are to a great extent identical in form with those described and figured in Vol. III, of the Transact. Bombay Literary Society, p. 324, &c.

2. From J. G. Delmerick, Esq., Rawul Pindi,—specimens of moulds used in counterfeiting coins; the following letter accompanied the specimens.

"A few weeks ago the Police of this District, in searching for implements of coining, discovered in the houses of Chandra Mall and his brothers Jewaya Mall, goldsmiths and residents of the town of Rawul Pindi, a quantity of moulds and forged Bactrian coins. These men are well known coin dealers, and as the moulds themselves would no doubt be objects of interest to the members of the coin committee, I have despatched by dâk bhangy four of the best specimens. They are composed of a fine description of clay, and are the only ones in good preservation. The others were in broken bits and formed a pretty large heap on the Magistrate's table. I suspect that the men received timely information of the movements of the Police, and were thus able to break up nearly the whole of the moulds, but nevertheless there was ample evidence to prove that they were old and systematic offenders."

"The moulds, I send, are all of the largest silver coins of Eucratides, of Heliocles and Laodice, of Hermeus, and of Azilises.

I. may add that no implements of coining *proper* were found and that the fabricated coins were destroyed by order of the Magistrate."

General A. Cunningham published many years ago notices on forged coins of the Bactrians and Indo-Scythians; vide Journal Asiatic Society, Bengal, 1840, Vol. IX, p. 1217 &c. The moulds forwarded by Mr. Delmerick shew a high finish, and coins cast in them require careful examination to be detected as falsifications.

3. From the Government of India, a copy of catalogue of Sanscrit manuscripts in the southern division of the Bombay Presidency.

In connection with the specimens of implements forwarded by Col. Saxton, the President announced that Mr. H. Rivett-Carnac has brought a fine collection of similar relics from Central India, and will lay them before the meeting.

Mr. H. Rivett-Carnac, in exhibiting these specimens of iron and other implements found in tumuli near Nágpúr, observed that he would not trouble the members with any lengthened description of the tumuli from which these remains had been obtained. Detailed accounts of the Cromlechs, Kistvaens, and Barrows of Central and Southern India had, from time to time, appeared in the Society's Journal, and in the Journals of the Bombay and Madras Societies, and the existence and character of these remains were doubtless well known to many gentlemen present. He would, however, desire to remind the meeting of the interesting point noticed by Colonel Meadows Taylor, who examined many Barrows in the Deccan, and who on his return to England visited and excavated some of the old tumuli in the North of England, and found an extraordinary resemblance to exist between the remains in India and in Europe.

Colonel Meadows Taylor in his paper, read before the Royal Irish Academy,* had brought out in a most striking manner, the perfect similarity that exists between the Barrows and Cromlechs of the Deccan, and the tumuli of Western and Northern Europe. Nágpúr is situated on the eastern border of the trap formation of the Deccan, and here, where the stone most ready to hand consists of basalt, the tumuli are found in the shape of mounds surrounded by a single or double row of trap boulders, and similar in shape and construction, to the well known Barrows of Scotland, the North of England, and other parts of Europe. Further to the East of Nágpúr on the sandstone formation, the form of tumuli changes, and Cromlechs or Kistvaens, similar to the "Kitscoty House" of Aylesford take the place of the Barrows.

And it is not only in the shape of the tumulus that the most extraordinary identity is to be traced between the prehistoric remains of India and Europe, but in the manner in which the bodies are buried in the urns and in the ornaments, and weapons placed with the urns within the tomb, the same striking resemblance is to be traced between the discoveries made in both countries. The specimens before the meeting were, Mr. Rivett-

* See the papers of Colonel Meadows Taylor, C. S. I., in the Journal of the Royal Irish Academy, and in that of the Ethnological Society.

Carnac said, but a few of a very large number of articles found in these Barrows, but they were quite sufficient to establish the identity referred to. These iron implements were invariably found together with pottery urns, or with fragments of them, for it was extremely difficult to get out the urns intact. Most of the specimens in the collection spoke for themselves, but the iron snaffle, the stirrups, the spear and other accoutrements of the warrior, whose tomb had been examined, were, he ventured to think, of special interest. He would also draw attention to a very perfect specimen of an iron battle-axe. It would be seen that the iron crossbands by which the axe was fastened to the handle were still intact. A reference to the Illustrated Catalogue of the Royal Irish Academy would shew that this specimen had an exact counterpart in an axe found in Ireland, in a Barrow similar to that from which the axe now exhibited was exhumed. And the same remark applied to the bangles and other articles in the collection, which would be found to resemble, in every respect, remains discovered, under exactly similar circumstances, in Ireland, which remains were figured in the Catalogue above referred to.

Another circumstance was perhaps worthy of notice, and might be useful in assisting to determine the age to which they belonged. On the sculpturings of the Bhilsa and Oomraoti topes, a people, who would appear to be distinct from the Aryans, were there represented wearing bangles, and armed with battle-axes similar to those now exhibited.

There was yet another circumstance connected with the remains which was perhaps as interesting as any of the points above noticed of the similarity between the remains in India and Europe. And he was not aware that this point had been noticed before. His attention had first been drawn to it by a work entitled "Archaic Sculpturings" written by Sir James Simpson, the well known antiquarian. This book contained an account, with illustrations, of peculiar marks found on the monoliths, which surround the Barrows in Northern Europe. Now although he (Mr. Rivett-Carnac) had often visited the Nágpúr tumuli, and noticed some indistinct markings on the weather-worn stones, he had never paid any very particular attention to them, until

he saw the engravings in Sir James Simpson's work. He was then immediately struck by the further extraordinary resemblance between the so-called "cup marks" on the monoliths surrounding the Barrows in England, and the marks on the trap boulders which encircled the Barrows near Nágpúr. Indeed, if the members interested would be so good as to compare the sketch of the Barrows and cup marks given in Sir James Simpson's book, with the tracing laid before the meeting of the "cup marks" on one of the Barrows at Junapani, near Nágpúr, this extraordinary resemblance would at once be apparent. The identity between the shape and construction of the tumuli, and between the remains found in the tumuli of the two countries had already been noticed, and now here was a third, and still more remarkable point, the discovery on these tumuli of markings which corresponded exactly with the markings found on the same class of tumuli in Europe. He would not trouble the meeting now with any theories founded on this extraordinary resemblance. A paper containing a full account of the discoveries, with sketches of the tumuli, the remains found therein, and the markings on the stones would soon be published, and all who took any interest in the subject would find therein such information as he was able to give. The subject of the similarity of the pre-historic remains of the Deccan and Northern Europe had also been treated of, most exhaustively, by Colonel Meadows Taylor in a paper which was doubtless familiar to most of the members. But the "cup markings" to which allusion had been made above, had not, he believed, been noticed before, and they formed, he would submit, another and very extraordinary addition to the mass of evidence which already existed in favor of the view, that a branch of the nomadic tribes who swept, at an early date, over Europe, penetrated into India also.

These tumuli were to be traced from Southern India, through the Deccan, to Nágpúr. He had not as yet been able to ascertain whether they were found in the country lying between Nágpúr and the Punjab. But on the frontier they were met with in large quantities, and from thence they could be traced, as if marking the line of progress of some great tribe, through Central Asia and Russia into Northern Europe.

Enquiries were now being made on the subject, and he hoped soon to be able to inform the Society of the result of further discoveries, and also that the chain of tumuli, the record of the movements of tribes between Central India and Northern Europe, was complete.

A lengthened discussion ensued in which Mr. E. C. Bayley, Mr. H. F. Blanford, the chairman and several other members took part.

Dr. A. M. Verchere drew the attention to a sketch which was published with his paper in the Journal of the Society for 1867, (Pt II., p. 114). His suggestion then was that the small holes, or cups, in large boulders between Jubbee and Nikkeo on the Indus, have been either made by a race of men, or that they had a glacial origin. He then thought rather to incline to the latter than to the first hypothesis, but it is just as well possible that those excavations have been executed by men. There are at present no settlements of any kind in the close neighbourhood.

The following gentlemen duly proposed and seconded at the last Meeting were ballotted for and elected ordinary members :—

Baden Powell, Esq., C. S. | J. H. Newman, Esq., M. D.
Surgeon Fred. Wm. Alex. De Fabeck,

The following have intimated their desire to withdraw from the Society :—

E. G. Man, Esq. | W. L. Granville, Esq.
Lieut. Col. G. B. Malleson. | P. Carnegy, Esq.
The Hon. F. Glover. | A. H. Giles, Esq.

The Council reported that they have ordered on a recommendation of the Finance Committee—that debts to the amount of 448 Rs. due to the Society, and 33 Rs. 10 ans. due to the Oriental Fund, by members and gentlemen deceased, be written off.

The receipt of the following communications was announced :—

1. Notes on some new species of birds from the North Eastern Frontier of India,—by Dr. T. C. Jerdon.

2. Notes on Indian Herpetology,—by Dr. T. C. Jerdon.

3. Observation on some species of Indian birds, lately published in the Society's Journal,—by Allan O. Hume, C. B.

4. Note on a few species of Andamanese land-shells, lately described in the American Journal of Conchology,—by Dr. F. Stoliczka.

The following paper was read,—

NOTES ON SOME NEW SPECIES OF BIRDS FROM THE NORTH-EASTERN FRONTIER OF INDIA,—by Dr. T. C. Jerdon.

Whilst in upper Assam last spring, I obtained a living specimen of a *Ceriornis* which at the time I was led to consider as *Cer. Temminckii*, but on comparing the figures of Gould (Birds of Asia), I found it to be a new and undescribed species, which I propose to call *Ceriornis Blythii*, after the late very able Curator of our Museum.

The species is conspicuously distinguished from *C. Temminckii*, as well as from the two other Indian species, by the uniform plain colouring of the lower parts, which are of a reddish stone colour without any spots. The red of the head, neck and breast is of a peculiarly vivid flame colour.

One specimen was brought down to Suddya by some Mishmese from the adjoining hills; it died shortly after, but the skin was preserved. An intelligent Assamese official, who is a good sportsman, assured me that he knew the bird well, and that it was found in winter at a comparatively low level in Upper Assam. A second specimen was brought down alive some little time afterwards, and this one I brought safely to Calcutta, and handed over to Dr. J. Anderson for transmission to the zoological Garden in London. A coloured drawing of the specimen has been made, before it was shipped.

Along with the last named specimen, a fine new Monal was brought down from the same hills. This differs conspicuously from *Lophophorus Impeyanus* in the total want of a crest, in the upper tail coverts being pure white, and in the tail itself of a darker rufous colour than in that species, and broadly tipped with white. The feathers of the back and rump are white, with a black centre to each feather. It is a larger and stouter bird

than the common Monal of the north-west Hymalayas. The orbital skin is blue in both species. In a notice lately sent to the editor of the Ibis, I have named this species *Loph. Sclaterii.* The only specimen known I had also brought to Calcutta, and it was forwarded to England, together with the *Ceriornis.*

This unexpected discovery of two new pheasants within the limits of our north-Eastern possessions indicates that we are at the borders of a somewhat distinct avifauna which yet leaves a large new field of enquiry open to the Indian naturalist.

Besides these two novelties I have obtained through Major Godwin-Austen a new swift, of which I append a description, and also a new pigeon which will be described shortly. Major Godwin-Austen discovered a new *Trochalopteron*, of which I had lately sent the description to the "Ibis."

Ceriornis Blythii, Jerdon.

Whole head, neck and breast vivid igneous red, head sub-crested with a narrow streak of black from the base of the bill to the occiput; a second streak from the eye to the nape; whole upper plumage, including wing-coverts, upper tail and sides of breast and flanks with white black-edged ocelli; some of the lowermost of the upper tail coverts buff with dark cross bands; quills dusky brown, with pale brownish bands; tail dusky brown.

The whole of the lower parts from the breast to under tail coverts of a reddish ashy or stone colour, the feathers very slightly darker at the tip. The skin of face and throat yellow, more or less mixed with orange and emerald green at the lowest part, it is bordered laterally by a very narrow black line; bill dusky; legs fleshy; size much the same as that of the other Indian species of *Ceriornis*, perhaps a trifle smaller.

From the hills at the head of the valley of Assam, and said in winter to descend nearly to the level of the river. Called by one good Assamese sportsman, *Húr-húria*, meaning the Golden Bird.

Lophophorus Sclaterii, Jerdon, ("Ibis" for 1870.)

Head not crested; whole upper surface of head, neck, interscapularies and wing coverts brilliant shining metallic blue-green, with the back of the neck bronzy gold, and reflections of the same here

and there; quills black, upper back and rump white, the feathers all black shafted; upper tail coverts white; tail reddish-brown, broadly tipped with creamy white; all the lower parts deep black. Bill dingy yellow; facial skin cobalt blue; legs, dusky yellowish. Size rather larger than that of *Lophophorus Impeyanus.*

The feathers of the head are exceedingly short and crisp. The living bird from which this description was taken, was brought down by some shikarees from the hills above Suddya. When I first saw it, the feathers of its head were not in good condition, and I thought that the absence of the crest might have been accidental. It has, however, moulted since I first saw it, and there is not the smallest appearance of a crest; indeed the feathers are particularly short, crisp, and curved in different directions. The other two species of Monal are both well crested, though the crest is of a different form in the new *Lophophorus L'Huysii* from that of the long known Impeyan pheasant.

Cypselus tectorum, Jerdon.

The thatch palm-swift.

Above glossy greenish brown, paler and less glossed below, somewhat albescent on chin and throat; quills and tail darker, brown-black.

Length about $4\frac{1}{4}$ inches; wing, $4\frac{1}{2}$; tail, $2\frac{1}{8}$.

This Swift is quite of the type of *Cyps. batassiensis*, but a much darker coloured bird, and with a shorter tail. I first saw it in Major Godwin-Austen's collection of birds made in the hills of North Cachar, and that gentleman permitted me to describe it. True to its type, it builds on palm leaves, but on such as form the roofs of the Nagas in those hills. Major Godwin-Austen obtained the nest and egg, being very similar to those of *batassiensis.*

On coming to Calcutta, I found that the same species had been procured by one of the Museum collectors from the Garro Hills, and since that Major Godwin-Austen has written to me "*Cypselus tectorum* found again on the roofs of Garro huts."

Then why absent in the intermediate range of the Khasi and Jaintia hills? Simply, I presume, because these races, being a little more civilized, do not thatch their huts with palm leaves.

The other papers on the list were postponed till next meeting on account of the late hour at which the meeting terminated.

LIBRARY.

The following books have been added to the Library since the Meeting held in January.

Presentations.

**** Donors in capitals.*

Bulletin de la Société de Géographie, Oct. to Nov., 1869 :—THE GEOGRAPHICAL SOCIETY OF PARIS.

The Quarterly Journal of the Geological Society, Nov., 1869 :—THE GEOLOGICAL SOCIETY OF LONDON.

Proceedings of the Academy of Natural Science of Philadelphia, Nos. 1 to 6, 1869 :—THE ACADEMY.

Journal of the Academy of Natural Science of Philadelphia, N. S., Vol. VI, part III :—THE SAME.

Report of the Executive Committee of the Memorial to the late H. Falconer :—THE COMMITTEE.

Discours d' ouverture du 6th Decr. 1869, par M. Garcin de Tassy : —THE AUTHOR.

Rámáyana, Vol. I, No. 10, edited by Pandita Hemachandra :—THE EDITOR.

Memoirs of the Geological Survey of India, Vol, VII, part I :—THE GEOLOGICAL SURVEY OF INDIA.

Annales Musei Botanici Batavii, edidit F. A. Guil. Miquel. Tom. IV, Fasc. 1 to 5 :—THE BATAVAIN SOCIETY.

Selections from the Records of the Government of India, Home Department, No. 71 :—THE BENGAL OFFICE.

Report on the Administration of the Customs Department in the Bengal Presidency for 1868-69 :—THE SAME.

Purchase.

Zenker's Handwörterbuch, Heft xiv.—Comptes Rendus, Nos. 18 and19:—Revue et Magasin de Zoologie, No. 10.—American Journal of Science No. 143.—Revue des Deux Mondes, 15th Nov.—Ain i Akbari :—Tarikh Badaoni.—Khazinat-ul-Asfiú.

LIST OF MEMBERS

OF THE

ASIATIC SOCIETY OF BENGAL,

ON THE 31ST DECEMBER, 1869.

LIST OF ORDINARY MEMBERS.

The * distinguishes Non-Subscribing, and the † Non-Resident Members.

N. B.—Gentlemen who may have changed their residence, since this list was drawn up, are requested to give intimation of such a change to the *Secretaries*, in order that the necessary alterations may be made in the subsequent edition.

Gentlemen who are proceeding to Europe, with the intention of not returning to India, are particularly requested to notify to the *Secretaries*, whether it be their desire to continue as members of the Society.

Date of Election.				
1847	June	2	*Abbott, Major-Gen. J., R. Artillery.	Europe
1860	Dec.	5	Abdullatíf Maulvi.	Calcutta
1867	June,	5	Abhayacharana Mallik, Bábu,	Calcutta
1868	Sept.	2	†Adam, R. M., Esq.	Sambhar Lake viâ Jeypúr
1869	Jan.	20	Adley, C. C., Esq., C. E.	Dum Dum
1860	July	4	†Ahmad Khan, Saied, Bahádur.	Allighur
1860	April	4	†Aitchison, J. E. T., Esq., M. D.	Láhor
1859	Feb.	2	*Alabaster, C., Esq.	China
1866	Jan.	17	Allan, Lieut.-Col. A. S.,	Calcutta
1869	Oct.	6	Allardyce, A., Esq.	Serampore
1852	July	7	*Allan, C., Esq., B. C. S.	Europe
1867	Aug.	7	†Amery, C. F., Esq.	Amritsar
1860	Oct.	3	Ámir Álí Khán Bahádur, Múnshi,	Calcutta
1861	May	1	*Anderson, Dr. T., F. L. S.	Europe
1865	Jan.	11	Anderson, Dr. J., F. L. S.	Calcutta
1843	Sept.	4	*Anderson, Lieut.-Col. W., Bengal Artillery.	Europe
1864	Dec.	7	*Anderson, W., Esq.	Europe
1861	Sept.	4	*Asghur Álí Khán Bahádur, Nawáb,	Europe
1869	Feb.	3	Ashton, The Rev. J. P.,	Calcutta
1861	July	6	*Asphar, J. J. T. H., Esq.	Europe
1855	July	4	Atkinson, W. S., Esq., M.A., F.L.S.	Calcutta
1869	Feb.	3	†Attara Singh Bahádur, Sirdár,	Bhaddur
1826	Sept.	6	Avdall, J., Esq.	Calcutta
1835	Oct.	7	*Baker, Col. W. E., Bengal Engineers.	Europe
1859	Aug.	3	Baláichánda Singha, Bábu,	Calcutta

Date of Election.		
1865 Nov. 1.	†Ball, V., Esq., Geol. Survey.	Geol. S. Office.
1860 Nov. 7.	Banerji, The Rev. K. M.,	Calcutta
1869 Dec. 1.	†Barker, R. A. Esq., M. D.	Serampore
1864 May 4.	*Barry, Dr. J. B.,	Europe
1862 Aug. 6.	†Basevi, Capt. J. P., Royal Engineers.	Utácamund
1860 July 4.	Batten, G. H. M., Esq., B. C. S.	Calcutta
1838 Jan. 3.	*Batten, J. H., Esq., B. C. S.	Europe
1859 May 4.	Bayley, E. C., Esq., B. C. S.	Calcutta
1861 Feb. 6.	†Bayley, S. C., Esq., B. C. S.	Patna
1868 May 6.	*Baynes, J., Esq.	Europe
1869 Feb. 3.	†Baxter, J. B., Esq., M. R. C. S.	Port Canning
1849 June 6.	*Beadon, The Hon'ble Sir Cecil, B. C. S.	Europe
1864 Sept. 7.	†Beames, J., Esq., B. C. S.	Balasore
1841 April 7.	Beaufort, F. L., Esq., B. C. S.	Calcutta
1861 Sept. 4.	*Beavan, Lieut. R. C., Bengal Staff Corps.	Europe
1847 Aug. 4.	*Beckwith, J., Esq.	Europe
1867 July 3.	†Belletty, N. A., Esq., Civil Assistant Surgeon.	Mymansing
1869 Jan. 20.	†Bellew, Dr. P. F.,	Madras
1830 Sept. 1.	*Benson, Lieut.-Col. R.,	Europe
1862 Oct. 8.	†Bernard, C. E., Esq., B. C. S.	Nágpúr
1862 June, 4.	†Bhau.Daji, Dr.,	Bombay
1864 Nov. 2.	Bhudeva Mukerjea, Bábú,	Chinsurah
1840 July 15.	*Birch, Major-General Sir R. J. H., K. C. B.	Europe
1846 Mar. 4	*Blagrave, Major T. C., 26th Regt., B. N. I.	Europe
1859 Sept. 7.	Blane, Col. Sir S. J.,	Calcutta
1857 Mar. 4.	Blanford, H. F., Esq., A. R. S. M., F. G. S.	Calcutta
1859 Aug. 3.	†Blanford, W. T., Esq., A. R. S. M., F. G. S., Geol. Survey.	Geol. S. Office
1864 April 6.	Blochmann, H., Esq., M. A.	Calcutta
1857 Aug. 2	*Bogle, Lieut.-Col. Sir A., Kt.	Europe
1869 June 2.	Bonnerjee, W. C., Esq.	Calcutta
1866 June 6.	Bourke, W. M., Esq.	Calcutta
1859 Oct. 12.	†Bowring, L. B., Esq., C. S. I., B. C. S.	Mysore
1868 Jan. 15.	†Boxwell, J., Esq., C. S.	Purí
1854 Nov. 1.	*Boycott, Dr. T., B. M. S.	Europe
1860 Mar. 2.	Brandis, Dr. D.,	Calcutta
1860 Oct. 3.	*Brandreth, The Hon'ble J. E. L.,	Europe
1862 Jan. 15.	†Briggs, Lieut.Col. D., Staff Corps.	Behár
1866 April, 4.	*Broderick, H. C., Esq., M. D.	Europe

Date of Election.		
1847 June, 2.	*Brodie, Capt. T., 5th Regt., B. N. I.	Europe
1866 Jan. 17.	*Brown, Col. D.,	Europe
1866 Nov. 7.	†Browne, Lieut. Col. Horace A.,	Prome, Burma
1666 June, 6.	†Brownfield, C., Esq.	Kámrúp
1868 June, 3.	†Buck, E. C., Esq., C. S.	Cawnpur
1866 June, 6.	†Buckle, Dr. H. B., C. B.	Dacca
1856 Sept. 3.	Bashiruddin, Sultán Mohammad,	Chinsurah
1867 Sept. 4.	Butler, Lieut. J.,	Nágá Hills
1869 Jan. 20.	†Cadell, A., Esq., B. A., C. S.,	Mozaffernagar
1860 June, 6.	†Campbell, C., Esq., C. E.	Jabalpúr
1859 Sept. 7.	*Campbell, Dr. A.,	Europe
1863 June, 3.	*Campbell, The Hon'ble G ,	Europe
1860 Jan. 3.	†Carnac, J. H. Rivett, Esq., B. C. S.	Nágpúr
1865 Nov. 1.	†Carnegy, P., Esq.	Faizábád
1867 Dec. 4.	†Chambers, F. J., Esq.	Lucknow
1868 Aug. 5.	†Chandramohana Gosvámi, Pandita	Gowhátí
1863 Aug. 5.	†Chandranátha Ráya, Rájá.	Nátor
1868 Feb. 5.	†Clark, Major E. G., Bengal Staff Corps.	Baraitch, Oudh
1863 April, 1.	*Cleghorn, Dr. H.,	Europe
1869 July, 7.	†Coats, J. M., Esq., M. D.	Házáríbágh
1861 Sept. 4.	†Cockburn, J. F., Esq., C. E.	Karharbári Colliery
1868 Nov. 4.	†Cole, Lieut. H. H., Royal Engr.	Siálkot
1862 April, 2.	*Colles, J. A. P., Esq., M. D.	Europe
1851 Mar. 5	*Colvin, J. H. B., Esq., B. C. S.	Europe
1868 Dec. 2.	†Cooke, J. E., Esq.	Haidarábád
1860 Dec. 5.	*Cooper, F. H., Esq., B. C. S.	Europe
1857 Mar. 4.	*Cowell, E. B., Esq., M. A.	Europe
1868 May, 6.	†Coxhead, T. E., Esq., C. S.	Sáran
1866 May, 2.	*Cox, W. H., Esq.	Europe
1866 Jan. 17.	Crawford, J. A., Esq., C. S.	Calcutta
1861 July, 3.	*Crockett, Oliver R., Esq.	China
1867 Aug. 7.	†Curran, R. H., Esq., L. R. C. S., L. K. R C. P.	Port Blair
1868 Sept. 2.	Cutsem, E. Ch. Van, Esq.	Calcutta
1866 Feb. 7.	†Daly, N., Esq.	Mayanoung, Burmah
1862 April, 2.	*Dalrymple, F. A. E., Esq., C. S.	Europe
1847 June, 2.	†Dalton, Col. E., T., C. S. I., Staff Corps.	Chhotá Nágpúr
1861 Mar. 6.	*Davey, N. T., Esq., Revenue Surv.,	Europe
1865 May, 3.	†Davies, C., Esq.	Rahtásghar
1861 Nov. 6.	†Davies, R. H., Esq., C. S. I., B. C. S.	Lucknow
1869 April 7.	†Day, Dr. F., F. L. S., F. Z. S.	Madras

Date of Election.		
1869 Oct. 6.	†Delmerick, J. G., Esq.	Ráwal Pindi
1864 July, 6.	Devendra Mallika, Bábu,	Calcutta
1856 June, 4.	DeBourbel, Major R., Bengal Engrs.	
1861 June, 5.	*Denison, His Excellency Sir W., K. C. B.	Europe
1863 Feb. 4.	†Deva Narayana Singha, The Hon'ble Rájáh,	Benares
1861 Mar. 6.	*Devereux, The Hon'ble H. B., B. C. S.	Europe
1862 May, 7.	†Dhanapati Singha Dughar, Ráya Bahádur.	Azimganj
1853 Sept. 7.	*Dickens, Lieut.-Col. C. H.,	Europe
1859 Sept. 7.	*Douglas, Col. C.,	Europe
1869 Feb. 3.	†Drew, F., Esq.	Jammú
1864 Dec. 7.	*Dunlop, H. G., Esq.	Europe
1867 June, 5.	†Duthoit, W., Esq., C. S.	Mírzápúr
1861 May, 1.	*Earle, Capt. E. L., Bengal Artillery.	Europe
1857 May, 6.	*Eatwell, Dr. W. C. B.,	Europe
1868 Oct. 7.	†Eddowes, W., Esq., M. D.	Erinpúr
1840 Oct. 7.	*Edgeworth, M. P., Esq., B. C. S.	Europe
1863 May 6.	†Edgar, J. W., Esq., B. C. S.	Cachár
1865 Feb. 1.	*Egerton, Ph., Esq., B. C. S.	Europe
1846 Jan. 7.	*Elliott, Sir Walter, late M. C. S.	Europe
1859 Nov. 2.	†Elliott, C. A., Esq., B. C. S.	Farruckábád
1856 Mar. 5.	*Ellis, Lieut.-Col. R. R. W., 23rd Regt., B. N. I.	Europe
1854 Nov. 1.	*Elphinstone, Capt. M. W., 4th Regt., B. N. I.	Europe
1868 Sept. 2.	Ernsthausen, Baron O.	Calcutta
1861 Jan. 9.	*Erskine, The Hon'ble C. J., Bombay C. S.	Europe
1856 Aug. 6.	*Erskine, Major W. C. B.,	Europe
1863 Oct. 7.	Ewart, Dr. J.,	Calcutta
1862 Aug. 6.	*Eyre, Col. Vincent, C. B.	Europe
1865 June, 7.	Fawcus, Dr. J.,	Calcutta
1851 May, 7.	Fayrer, Dr. J., C. S. I.	Calcutta
1863 Jan. 15.	†Fedden, Francis, Esq., Geol. Survey.	Hinganhát
1869 April, 7.	†Ferrar, M. L., Esq., B. A., C. S.	Rái Bareli, Oudh
1868 May, 6.	*Field, C. D., Esq., C. S.	Europe
1859 Oct. 12.	*Fisher, A., Esq.	China
1869 Sept. 1.	*Fisher, J. H., Esq., C. S.	Mattrá
1860 Mar. 7.	†Fitzwilliam, The Hon'ble W. S.,	Europe
1865 April, 5.	†Fleming, Dr. J. M.,	Khundwá, Nimár

Date of Election.		
1867 April, 3.	*Ford, Lieut.-Col. B.,	Europe
1859 Oct. 12.	†Forlong, Major J. G. R., Madras Staff Corps.	Ábú, Rájputáná
1861 Feb. 6.	†Forest, R., Esq., Civil Engineer.	Etáwah
1863 Dec. 2.	†Forsyth, Capt. J., Bengl. Staff Corps.	Nimár
1863 June, 3.	*Forsyth, T. D., Esq., C. B.	Europe
1868 April, 1.	*Frederic of Schleswig Holstein, H. R. H. Prince,	Europe
1860 Mar. 7.	*Frere, His Excellency Sir H. Bartle, K. C. B., B. C. S.	Europe
1869 Sept. 1.	†Fryer, Capt. G. E.,	Amherst
1859 Dec. 7.	Futteh Ali, Maulavi.	Calcutta
1867 Sept. 4.	Fyfe, The Rev. W.,	Calcutta
1849 Sept. 5.	†Fytche, Major Genl. A., C. S. I, Chief Commissioner of Burmah.	Rangún
1864 Aug. 11.	†Garrett, C. B., Esq., C. S.	Sháhábád
1859 Aug. 3.	Gastrell, Col. J. E., 13th Regt., N. I, Supdt., Rev. Survey.	Calcutta
1867 Dec. 4.	Gay, E., Esq.	Calcutta
1867 Sept. 4.	Gauvain, Capt. V.,	Calcutta
1868 Nov. 4.	*Geddes, J. C., Esq., C. S.	Europe
1859 Sept. 7.	Geoghegan, J., Esq., B. C. S.	Calcutta
1865 June, 7.	†Giles, A. H., Esq.	Krishnagar
1842 Sept. 2.	*Gladstone, W., Esq.	Europe
1867 May 1.	Glover, The Hon'ble F.,	Calcutta
1861 Feb. 6.	†Godwin-Austen, Major H. H., Topographical Survey.	Cherrá Punjí
1869 Oct. 6.	†Gomes, A. D. B., Esq.	Calcutta
1859 Sept. 7.	*Goodeve, E., Esq., M. D.	Europe
1862 July, 2.	*Gordon, J. D., Esq., C. S.	Europe
1869 July, 7.	†Gordon, Robert, Esq., C. E.	Henzaday, Burma
1864 Dec. 5.	†Gurucharana Dása, Bábu,	Jámu Kándi
1862 Feb. 5.	†Gauradása Basáka, Bábu,	Khulna
1863 Nov. 4.	†Gowan, Lieut.-Col. J. G.	Morar, Gwalior
1859 Dec. 7.	*Grant, Sir J. P., K. C. B.	Europe
1860 Jan. 4.	Grant, T. R., Esq.	Calcutta
1867 Aug. 7.	Granville, W. L., Esq.	Calcutta
1869 Oct. 6.	†Gray, B., Esq., M. B.	Láhor
1867 June, 5.	†Gregory, Capt. J., Depy. Commr.	Debrughar
1860 July, 4.	Grey, The Hon'ble W., B. C. S., Lieut.-Governor of Bengal.	Calcutta
1866 June, 6.	†Gribble, T. W., Esq., B. C. S.	Sáran
1861 Sept. 4.	†Griffin, L. H., Esq., B. C. S.	Láhor
1860 Nov. 7.	†Griffith, R. T. H., Esq., M. A.	Benares

Date of Election.		
1869 Feb. 3.	†Giriprasáda Singha, Thákur,	Allighur
1861 Feb. 6.	†Growse, F. S., Esq., B. C. S.	Mainpuri
1869 May, 5.	Gubboy, R. A., Esq.	Calcutta.
1862 Feb. 5.	*Guthrie, Col. C. S., Bengal Engrs.	Europe
1867 July, 3.	†Hacket, C. A., Esq., Geol. Survey.	Geol. S. Office
1869 April, 7.	†Hæberlin, The Rev. C.,	Chhotá Nágpur, Ranchee
1847 June, 2.	*Hall, F. E., Esq., M. A., D. C. L.	Europe
1866 Jan. 17.	†Hamilton, Major T. C.,	Rangoon
1863 June, 3.	*Hamilton, Col. G. W.,	Europe
1855 Mar. 7.	†Hamilton, R., Esq.	Wurdah
1847 May, 5.	*Hannyngton, Col. J. C., 63rd Regt., N. I.	Europe
1859 Oct. 12.	*Hardie, Dr. G. K.,	Europe
1866 Nov. 1.	Harendra Krishna Bahádur, Kumár.,	Calcutta
1862 Oct. 8.	*Harington, The Hon'ble H. B.,	Europe
1861 Feb. 6.	†Harrison, A. S., Esq., B. A.	Bareilly
1859 Oct. 12.	†Haughton, Lieut.-Col. J. C., C. S. I.	Cuch Behár
1862 Aug. 6.	†Heeley, W. L., Esq., B. A., C. S.	Rájsháhi
1866 April, 4.	*Henry, N. A., Esq.	Europe
1853 July, 6.	†Herschel, W. J., Esq., B. C. S.	Dacca
1854 Mar. 1.	*Hichens, Lieut. W., Bengal Engrs.	Europe
1868 Aug. 5.	†Hobart, R. T., Esq., C. S.	Chunár
1863 July, 1.	*Horne, C., Esq., C. S.	Europe
1860 Mar. 7.	Hovenden, Major J. J., Bengal Engineers.	Calcutta
1863 Jan. 15.	†Howell, M. S., Esq., C. S.	Debra Dhoon
1867 Sept. 4.	†Hughes, A. J., Esq., C. E.	Dariábád
1867 Aug. 17.	†Hughes, T. H., Esq., A. R. S. M., F. G. S., Geol. Survey.	Geol. S. Office
1867 Aug. 7.	†Hughes, Lieut. W. G.,	Tounghoo, B. Burmah
1868 Nov. 4.	†Holroyd, Capt. W. R. M.	Láhor
1866 Feb. 7.	Hoyle, G. W., Esq.	Calcutta
1867 May, 1.	*Hyatt, Dr. R. N., Civil Surgeon.	Europe
1868 April, 1.	Hyde, Lieut.-Col. H., R. E.	Calcutta
1869 Sept. 1.	Hyde, E., Esq.	Calcutta
1866 Mar. 7.	†Irvine, W., Esq., C. S.	Goruckpur
1860 Jan. 4.	†Innes, Lieut.-Col. J. J. McLeod, R.E.	Láhor
1862 Oct. 8.	†Irwin, Valentine, Esq., C. S.	Tipperah
1853 Dec. 7.	†Isvariprasáda Singha Bahádur, Rájah	Benares
1864 Sept. 7.	Jackson, The Hon'ble E.,	Calcutta
1841 Mar. 5.	*Jackson, W. B., Esq., B. C. S.	Europe

Date of Election.		
1861 Dec. 4.	*James, Major H. R., C. .B	Europe
1864 Sept. 7.	*Jardine, R., Esq., C. S.	Europe
1845 Dec. 3.	†Jerdon, Dr. T. C.	Dacca
1866 Feb. 7.	†Johnson, W. H., Esq.	Siálkot
1847 June, 2.	*Johnstone, J., Esq.	Europe
1862 Mar. 5.	†Johnstone, Capt. J. W. H., Assistant Commissioner.	Sháhpúr
1867 Dec. 4.	†Johnstone, Capt. J.	Keonjas viâ Bhadrack
1859 Sept. 7.	*Jones, R., Esq.	Europe
1865 June, 7.	†Jayakissen, Dása Bahádur, Rájah,	Allighur
1869 April, 7.	Kabiruddin Ahmad, Moulavie,	Calcutta
1858 Feb. 3.	Káliprasanna Singha, Bábu,	Calcutta
1863 July 1.	*Kane, H. S., Esq., M. D.	Europe
1868 Feb. 5.	†Kavanagh, J., Esq.	Goond, Oudh
1850 April, 3.	*Kay, The Rev. W., D. D.	Europe
1861 Dec. 15.	†Kempson, M., Esq., M. A.	Berilli
1867 Dec. 4.	†King, G., Esq., M. B.	Najíbábád
1867 Mar. 6.	†King, Capt. H. W.	P. & O. Co.'s Office
1862 Jan. 15.	*King, W., Jr., Esq., Geol. Survey.	Europe
1867 Mar. 6	†Knox, G. E, Esq., C. S.	Meerut
1869 May, 5.	Kurz, S., Esq.	Calcutta, Botanical Gardens
1839 Mar. 6	*Laidlay, J. W., Esq.	Europe
1861 Mar. 6.	*Laing, The Hon'ble S.,	Europe
1863 Sept. 2.	Lane, T. B., Esq., B. C. S.	Calcutta
1869 Sept. 1.	Latham, G., Esq, C. E.	Calcutta
1851 Dec. 3.	*Layard, Col. F. P.,	Europe
1868 Sept. 2.	Lazarus, C., Esq.	Calcutta
1869 May, 5.	†Leeds, R. J, Esq., C. S.	Mírzápúr
1852 April 7.	Lees, Lieut.-Col. W. N., LL. D.	Calcutta
1868 Feb. 5.	†Lees, L. H., Esq., M. D.	Simla
1868 July 1.	†Leitner, Dr. G. W.,	Láhor
1859 Dec. 7.	†Leonard, H., Esq., C. E.	Calcutta
1869 June 2.	†Leupolt, J. C., Esq., C. S.	Azimgarh
1865 June 7.	*Lewin, Capt. T. H.,	Europe
1856 Feb. 6.	*Liebig, Dr. G. von	Europe
1860 Jan. 4.	Lindsay, E. J., Esq.	Calcutta
1862 Dec. 3.	Lobb, S., Esq., M. A.	Calcutta
1864 Nov. 2.	Locke, H. H., Esq.	Calcutta
1869 April 7.	†Lockwood, E. D., Esq., C. S.	Tipperah
1866 May. 2.	*Lovett, Lieutenant B.,	Ispahán
1866 Jan. 17.	†Low, James, Esq., G. T. S.	Almora

Date of Election.		
1854 Nov. 1.	*Lushington, F. A., Esq., B. C. S.	Europe
1869 July 7.	†Lyall, C. J., Esq., B. A., C. S.	Balandshahr
1868 Dec. 2.	†Macauliffe, M., Esq., B. A., C. S.	Multan
1866 June 6.	Macdonald, Major J., Staff Corps.	Calcutta
1848 April 5.	†Maclagan, Col. R., F.R.S.E.	Láhor
1866 Jan. 17.	†Macgregor, Major C. M., Staff Corps.	Simla
1853 April 6.	*Macrae, Dr. A. C.,	Europe
1867 July 3.	Mackenzie, S. C., Esq., M. D.	Calcutta
1867 July 3.	Macnamara, Dr. C.	Calcutta
1863 Jan. 15.	*Maine, The Hon'ble H. S.,	Europe
1867 April 3.	†Mainwaring, Lieut.-Col. G. B.,	Darjeeling
1860 Jan. 4.	*Mair, D. K., Esq., M. A.	Europe
1865 Mar. 1.	†Malleson, Lieut.-Col. G. B.	Mysor
1862 Sept. 3.	*Mallet, F. R., Esq., Geol. Survey.	Europe
1860 July 4.	†Man, E. G., Esq.	Rangún
1852 Nov. 3.	Manickjee Rustomjee, Esq.	Calcutta
1861 June 5.	†Mána Singh Bahádur, Mahárájah,	Oudh
1867 Mar. 6.	Markby, The Hon'ble W.,	Calcutta
1869 July 7.	†Markham, A. M., Esq., C. S.	Bijnour
1864 Aug. 11.	*Marks, The Rev. J. Ebenezer,	Europe
1868 July 1	*Marshall, Lieut. C. H. T.,	Europe
1850 Jan. 2.	*Marshman, J. C., Esq.	Europe
1863 Nov. 4.	*McClelland, D. J.,	Europe
1837 Oct. 4.	†McLeod, The Hon'ble Sir D.F., C.B., K. C. S. I., B. C S.	Murree
1860 Mar. 7.	†Medlicott, H. B., Esq., F. G. S., Geol. Survey.	Geol S. office
1861 Feb. 6.	*Melville, Capt. A. B., Staff Corps.	Europe
1855 Nov. 7.	*Middleton, J., Esq.	Europe
1867 June 5.	Milman, D. D., The Right Rev. Lord Bishop of Calcutta, R.,	Calcutta
1850 April 3.	*Mills, A. J. M., Esq., B. C. S.	Europe
1867 April 3.	Mahendralála Saracára, Dr.,	Calcutta
1847 April 7.	*Money, D. J., Esq., B. C. S.	Europe
1856 Feb. 6.	†Money, W. J., Esq., C. S. I., B.C. S.	Mymansing
1867 Mar. 6.	†Montgomerie, Major T. G., R. E.	Dera
1865 July 5.	†Morland, Lieut.-Col. J,	Meerut
1854 Dec. 6.	†Morris, G. G., Esq., B. C. S.	Backerganj
1837 July 5.	*Muir, J., Esq.	Europe
1854 Oct. 11.	†Muir, The Hon'ble Sir. W., K. C.S. I., B. C. S.	Alláhábád
1862 July 2.	*Napier of Magdala, Lord R., General, G. C. S. I., K. C. B.	Europe
1869 May 5.	Nevill, G., Esq., C. M. Z. S.	Calcutta

Date of Election.		
1869 May 5.	†Newall, Lieut.-Col. D. J. F., R. A.	Mean Meer
1865 Feb. 1.	†Newul Kishwar, Múnshi,	Lucknow
1852 Sept. 1.	*Nicholls, Capt. W. T., 24th Regiment, M. N. I.	Europe
1863 Jan. 15.	Norman, The Hon'ble J P.,	Calcutta
1869 July 7.	†Nursing Rao, A. V., Esq.	Vizagapatam
1851 June 4.	Oldham, T., Esq., LL. D., F. R. S., Geol. Survey.	Calcutta
1869 April 5.	†Oldham, W., Esq., L. L. D., C. S.	Ghazipur
1867 Aug. 7.	†Oldham, R. A., Esq , C E.	Dehree,on Son
1866 July 4.	†Ormsby, M. H., Esq., C. E.,L. L. D., Geol. Survey	Geol. S. office
1837 June 7.	*O'Shaughnessy, Sir W. B.,	Europe
1847 Feb. 10.	*Ousely, Major W. R.,	Europe
1864 Mar. 2.	*Palmer, Dr. W. J.,	Europe
1868 Nov. 4.	†Pearson, C., Esq.	Rawul Pindi
1862 May 7.	Partridge, S. B., Esq., M. D.	Calcutta
1869 July 7.	Pell. S., Esq.	Calcutta
1867 Feb. 6.	*Paul, J., Esq.	Europe
1860 Feb. 1.	†Pearse, Major G. G.,	Kampti
1867 Mar. 6.	Pearimohana Mukarji, M. A , Bábu ,	Uttarpárah
1864 Mar. 2.	*Pellew, F. H., Esq., C. S.	Europe
1865 Sept. 6.	†Peppe, J. H., Esq.	Gayá
1868 May 6.	†Peterson, F. W., Esq.	Bombay
1867 Nov. 6.	*Petit, Mons. Eugene,	Europe
1835 July 1.	†Phayre, Col.,Sir A.P., K.C.S.I., C.B.	Simla
1864 Nov. 2.	Phear, The Hon'ble J. B.,	Calcutta
1869 Feb. 3.	†Pickford, J., Esq.,	Madras
1868 May 6.	Pirie, A., Esq.	Calcutta
1867 Sept. 4.	*Place, Mons. V.,Consul-Gen., France	Europe
1862 Oct. 8.	†Pulinavehári Sen, Bábu,	Berhampur
1868 April 1.	†Pramathanátha Ráya, Kumár,	Digápati
1869 Feb. 3.	Pratápachandra Ghosha, B. A.	Calcutta
1839 Mar. 6.	Pratt, The Ven'ble Archdeacon J.H., M.A.	Calcutta
1860 Jan. 4.	Priyanátha Setha, Bábu,	Calcutta
1825 Mar. 9.	*Prinsep, C. R., Esq.	Europe
1853 April 6.	Rádhánátha Sikdára, Bábu,	Calcutta
1849 Sept. 5	Rájendra Datta, Bábu,	Calcutta
1856 Mar. 5.	Rájendralála Mitra, Bábu,	Calcutta
1868 Jan. 15.	†Rakhaldass Haldára, Bábu,	Chhota Nágpúr
1864 May 4.	Ramánátha Vasu, Bábu,	Calcutta

Date of Election.		
1837 Feb. 1	Ramanátha Thákura, Bábu,	Calcutta
1866 Jan. 17	†Rattray, A., Esq., Asst. Commr, Hill Tracts.	Chittagong
1869 June 2	†Rawlins, T. W., Esq., C. S.	Alláhábád
1860 Mar. 7	†Reid, H. S., Esq., C. S.	Alláhábád
1868 June 3	Reinhold, H., Esq.	Calcutta
1864 Dec. 7	†Richardson, R. J., Esq., C. S.	Sháhábád
1857 June 7	*Riddell, The Hon'ble H. B., B. C. S.	Europe
1868 April 1	Robb, G., Esq.	Calcutta
1868 July 1	†Roberts, The Rev. J.,	Panjáb
1863 April 1	*Robertson, C., Esq., C. S.	Europe
1865 Feb. 1	Robinson, S. H., Esq.	Calcutta
1847 Dec. 1	*Rogers, Capt. T. E.,	Europe
1866 Dec. 5	Ross, J. M., Esq.	Calcutta
1869 July 7	†Ross, Lieut. J. C., R. E.	Meerut
1861 Dec. 4	†Saunders, C. B., Esq., C. B., B. C. S.	Haidarábád
1864 June 1	Saunders, J. O'B., Esq.	Calcutta
1854 Dec. 6	†Saxton, Col. G. H., F. G. S., Madras Staff Corps	Canúr
1854 May 2	*Schiller, F., Esq.	Europe
1869 Feb. 3	†Schwendler, L., Esq.	
1860 Feb. 1	*Scott, Col E. W. S.,	Europe
1866 Jan. 17	†Seaton, Capt. W. J.,	Rangún
1869 Aug. 4	Selbach, W., Esq.	Calcutta
1860 July 4	†Shelverton, G., Esq.	Waltair, near Vizagapatam.
1866 Sept. 5	*Sherer, Major J. F.,	Europe
1867 April 3	†Sheriful Omrah, Nawab Sir, Bahádur, K. C. S. I.	Madras
1845 Jan. 14	*Sherwill, Lieut.-Col. W. S., 66th Regiment, B. N. I., F. G. S., F. R. G. S.	Europe
1868 Oct. 7	Shircore, Dr. S. M.,	Calcutta
1863 April 1	†Showers, Lieut.-Col. C. L.	Murree
1869 June 2	Schroeder, J., Esq.	Calcutta
1866 June 6	†Sime, J., Esq. B. A.	Agra
1864 Sept. 7	*Sladen, Major E. B.	Europe
1866 June 6	†Smart, R. B., Esq., Rev. Survey.	Rajpúr, Central Province
1865 July 5	†Smith, D. Boyes, Esq, M. D.	Simla
1868 April 1	†Smith, McLaren W., Esq.	Berhampúr
1868 July 1	Smith, W., Esq., C. E.	Calcutta
1856 Feb. 6	*Smith, Col. J. F.,	Europe
1854 Sept. 6	*Spankie, The Hon'ble R., B. C. S.	Europe
1864 Mar. 2	†Spearman, Capt. H. R.,	Rangún

Date of Election.		
1867 May 1.	†Steel, Lieut. E. H., R A.	Debrughar
1843 Sept. 4	†Stevens, W. H., Esq., C. E.	Darbhánga
1867 Dec. 4.	*Stephen, Major J. G., 8th N. I.	Europe
1863 Sept. 2.	Stewart, R. D., Esq.	Calcutta
1864 April 6.	*Stewart, J. L, Esq, M. D.	Europe
1861 Sept. 4.	Stokes, Whitley, Esq.	Calcutta
1863 Nov. 4.	Stoliczka, F., Esq., Ph. D., F. G. S., Geol. Survey.	Calcutta
1868 Sept. 2.	†Stoney, R. V., Esq.	Angul viâ Cuttack
1843 May 3.	Strachey, Col., The Hon'ble R., F. R. S., F. L. S., F. G. S., C. S. I., C B	Calcutta
1869 Feb. 3.	Strachey, The Hon'ble J.,	Calcutta
1859 Mar. 2.	†Stubbs, Major F. W., Ben. Artillery.	Attock
1858 July 7.	*Sutherland, H. C., Esq., B. C. S.	Europe
1864 Aug. 11.	Swinhoe, W., Esq.	Calcutta
1863 Sept. 3.	Syámácharana Saracára, Bábu,	Calcutta
1866 Jan. 17.	Tagore, G. M., Esq.	Calcutta
1865 Sept. 6.	Tawney, C. H., Esq., M. A.	Calcutta
1865 April 5.	Taylor, R., Esq.	Calcutta
1860 May 2.	Temple, the Hon'ble Sir R., K. C. S. I., B. C S.	Calcutta
1859 Mar. 2.	†Theobald, W., Jr., Esq., Geological Survey.	B. Burma
1869 Feb. 3.	†Thomas, T., Esq.	Lucknow
1869 Oct. 6.	†Thomson, A, Esq.	Faizábád
1860 June 6.	*Thompson, J. G., Esq.	Europe
1863 Mar. 4.	*Thompson, Major G. H., Bengal Staff Corps.	Europe
1863 June 4.	†Thornton, T. H., Esq., D. C. L, C. S.	Láhor
1847 June 2.	Thuillier, Col. H. L., F. R. G. S., Royal Artillery.	Calcutta
1863 May 6.	†Thuillier, Capt. H. R.,	Farídpúr
1862 July 2.	*Thurlow, The Hon'ble T. J. H.,	Europe
1865 July 5.	†Tolbort, T. W. H., Esq., C. S.	Dera Ismail Khan
1865 July 5.	Tonnerre, Dr. C. F.,	Calcutta
1862 Feb. 5.	*Torrens, Col. H. D.,	Europe
1861 June 5.	†Tremlett, J. D., Esq., M. A., C. S.	Delhi
1863 Mar. 4.	*Trevelyan, The Right Hon'ble Sir C., K. C. B.	Europe
1841 Feb. 3.	*Trevor, The Hon'ble C. B., B. C. S.	Europe
1864 Mar. 2.	†Trever, Lieut. E. A., Royal Engr.	Haidarábád
1861 Sept. 4.	Tween, A., Esq., Geological Survey.	Calcutta
1863 May 6.	†Tyler, Dr. J.	Mynpuri

Date of Election.		
1869 June 2	Udayachánda Datta, Bábu,	Purulia, Manbhúm
1860 May 2.	†Vanrenen, Major A. D., Ben. Staff Corps.	Bijnour
1864 Feb. 3.	†Verchere, A. M., Esq., M. D.	Jallandar
1864 April 6.	†Vijayaráma Gajapati Ráj Munniá Sultán Bahádur, Máharájah Mirza,	Vizianagaram
1869 Augt. 4.	Wáhid Ali, Prince Jahán Qadr Muhammad, Bahádur.	Garden Reach
1865 Nov. 1.	Waldie, D., Esq., F. C. S.	Calcutta
1861 May 1.	†Walker, Col., J. T., Royal Engrs., Bombay.	Dera
1863 Dec. 2.	†Walker, A. G., Esq., C. S.	Onao, Oudh
1863 May 6.	*Wall, P. W., Esq., C. S.	Europe
1869 Dec. 1.	Wallace, Lieut. W. E. A., R. E.	Calcutta
1863 Oct. 7.	Waller, W. K , Esq., M. B.	Calcutta
1862 Jan. 15	†Ward, G. E., Esq., B. C. S.	Muzaffarnagar
1852 July 7.	*Ward, J. J., Esq., B. C. S.	Europe
1859 July 6.	*Warrand, R. H. M., Esq., B. C. S	Europe
1865 May 3.	Waterhouse, Lieut. J., Royal Artillery.	Calcutta
1854 July 5.	*Watson, J., Esq., R. C. S.	Europe
1847 Nov. 3.	*Waugh, Major-General Sir A. S., C. B., F. R. S., F. R. G. S.	Europe
1869 Sept. 1.	†Westland, J., Esq., C. S.	Jessore
1867 Feb. 6.	†Westmacott, E. V., Esq., B. A., C. S.	Dinajpur
1862 Oct. 8.	Wheeler, J. T., Esq.	Calcutta
1867 Aug. 7.	†Wilcox, F., Esq., Bengal Police.	Purulia, Manbhúm
1864 Mar. 2.	Wilkinson, C. J., Esq.	Calcutta
1861 Sept. 4.	†Williams, Dr. C., H. M.'s 68th Regt.	Rangún
1867 Jan. 16.	†Williamson, Lieut. W. J.	Garrow Hills
1867 Mar. 6.	Willson, W. G., Esq., B. A.	Calcutta
1859 Sept. 7.	†Willson, W. L., Esq., Geol. Survey.	Geol. S. office
1859 Aug. 3.	*Wilmot, C. W., Esq.	Europe
1865 Feb. 1.	†Wilmot, E., Esq.	Delhi
1866 Mar. 7.	*Wise, Dr. J. F. N.,	Europe
1867 July 3.	†Wood, Dr. J. J.,	Ranchi
1851 May 7.	*Woodrow, H., Esq., M. A.	Europe
1859 Mar. 2.	*Wortley, Major A. H. P.,	Europe
1862 Aug. 6.	*Wylie, J. W., Esq., Bombay C. S.	Europe
1869 Sept. 1.	Yadulála Mallika, Bábu,	Calcutta
1868 June 3.	Yatindramohana Thákura, Bábu,	Calcutta

Date of Election.		
1867 Mar. 6.	†Yogendranátha Mallika, Bábu,	Andul
1858 April 4.	*Young, Lieut.-Col. C. B.,	Europe
1856 July 2.	*Yule, Col. H., R. E.	Europe

LIST OF HONORARY MEMBERS.

Date of Election		
1825 Mar. 9.	M. Garcin de Tassy, Membre de l'Inst.	Paris
1826 ,, 1.	Sir John Phillippart.	London
1829 July 1.	Count De Noe.	Paris
1831 ,, 7.	Prof. C. Lassen.	Bonn
1834 Nov. 5.	Sir J. F. W. Herschel, F. R. S.	London
1834 ,, 5.	Col. W. H. Sykes, F. R. S.	London
1835 May 6.	Prof. Lea.	Philadelphia
1842 Feb. 4.	Dr. Ewald.	Göttingen
1842 ,, 4.	Right Hon'ble Sir Edward Ryan, Kt.	London
1843 Mar. 30.	Prof. Jules Mohl, Memb. de l' Instit.	Paris
1847 May 5.	His Highness Hekekyan Bey.	Egypt
1847 Sept. 1.	Col. W. Munro.	London
1847 Nov. 3.	His Highness the Nawab Nazim of Bengal.	Murshidábád
1848 Feb. 2.	Dr. J. D. Hooker, R. N., F. R. S.	Kew
1848 Mar. 8.	Prof. Henry.	Princeton, United States
1853 April 6	Major-Gen. Sir H. C. Rawlinson, K. C. B., F. R. S., D. C. L.	London
1854 Aug. 2.	Col. Sir Proby T. Cautley, K. C. B., F. R. S.	London
1858 July 6.	B. H. Hodgson, Esq.	Europe
1859 Mar. 2	The Hon'ble Sir J. W. Colvile, Kt.	Europe
1860 ,, 7.	Prof Max Müller.	Oxford
1860 Nov. 7.	Mons. Stanislas Julien.	Paris
1860 ,, 7.	Dr. Robert Wight.	London
1860 ,, 7.	Edward Thomas, Esq.	London
1860 ,, 7	Dr. Aloys Sprenger.	Germany
1860 ,, 7	Dr. Albrecht Weber.	Berlin
1865 Sept. 6.	Edward Blyth, Esq.	Europe
1868 Feb. 5.	Genl. A. Cunningham.	London
1868 ,, 5.	Prof. Bápu Déva Sástri.	Benares
1868 ,, 5.	Dr. T. Thomson, F.R S., F.L.S., F.G.S.	London
1868 Sept. 2.	A. Grote, Esq., C. S.	London

LIST OF CORRESPONDING MEMBERS.

Date of Election.		
1844 Oct. 2.	Macgowan, Dr. J.,	Europe
1856 June 4.	Kramer, Herr A. von,	Alexandria
1856 „ 4.	Porter, The Rev. J ,	Damascus
1856 „ 4.	Schlagintweit, Herr H. von,	Bavaria
1856 „ 4.	Smith, Dr. E.,	Beyrout
1856 „ 4.	Tailor, J., Esq.,	Bussorah
1856 „ 4.	Wilson, Dr.,	Bombay
1857 Mar. 4.	Neitner, J., Esq.,	Ceylon
1858 Mar. 3.	Schlagintweit, Herr R. von,	Giesen
1859 Nov. 2.	Frederick, Dr. H.,	Batavia
1859 May. 4.	Bleeker, Dr. H.,	Batavia
1860 Feb. 1.	Baker, The Rev. H.,	E. Malabar
1860 „ 1.	Swinhoe, R., Esq., H. M.'s Consul,	Amoy
1860 April 4.	Haug, Dr. M.,	Punah
1861 July 3.	Gosche, Dr. R.,	Berlin
1862 Mar. 5.	Murray, A., Esq.,	London
1863 Jan. 15.	Goldstücker, Dr. T.,	London
1863 July 4.	Barnes, R. H., Esq.,	Ceylon
1866 May 7.	Schlagintweit, Prof. E. von,	Munich
1866 „ 7.	Sherring, The Rev. M. A.,	Benáras
1868 Feb. 5.	Foucaux, M. F. H.,	Paris
1868 „ 5.	Holmboe, Prof.,	Christiania

LIST OF ASSOCIATE MEMBERS.

1835 Oct. 7.	Stephenson, J., Esq.,	Europe
1838 Feb. 7.	Keramut Ali, Saiad ,	Hugli
1843 Dec. 6.	Long, The Rev. J.,	Calcutta
1865 May 3.	Dall, The Rev. C. H. A.,	Calcutta

ELECTIONS IN 1869.

ORDINARY MEMBERS.

C. C. Adley, Esq., C. E.	Dum Dum
Dr. P. F. Bellew.	Madras
A. Cadell, Esq., C. S.	Mozaffarnagar
Sirdár Attar Sing Bahádur.	Bhaddur
Dr. J. B. Baxter.	Port Canning
The Rev. J. P. Ashton.	Calcutta
F. Drew, Esq.	Jammú
Thákura Griprasáda Sing.	Allighur
J. Pickford, Esq.	Madras
Bábu Pratápchándra Ghosha.	Calcutta
The Hon'ble J. Strachey.	Calcutta

L. Schwendler, Esq.	Calcutta
T. Thomas, Esq.	Lucknow
Dr. F. Day.	Madras
The Rev. C. Hæberlin.	Chhota Nagpur
M. L. Ferrar, Esq., C. S.	Oudh
E. D. Lockwood, Esq., C. S.	Tipperah
Moulavie Kabiruddin Ahmad.	Calcutta
R. A. Gubboy, Esq.	Calcutta
R. J. Leeds, Esq., C. S.	Mirzápur
S. Kurz, Esq.	Botanical Garden, Sibpúr
G. Nevill, Esq., C. M. Z. S.	Calcutta
Lieut.-Col. D. J. T. Newall, R. A.	Mean Meer
W. Oldham, Esq., LL. D., C. S.	Ghazipur
J. Schroeder, Esq.	Calcutta
J. C. Leupolt, Esq., C. S.	Azimghar
T. W. Rawlins, Esq., C. S.	Allahabad
Bábu Udayachánda Datta.	Purulia, Manbhum
W. C. Bonnerjee, Esq.	Calcutta
J. M. Coates, Esq., M. D.	Hazáríbágh
Robert Gordon, Esq., C S.	Henzaday, British, Burmah
C. E. Lyall, Esq., C. S., B. A.	Bulandshahr
A. M. Markham, Esq., C. S.	Bijnour
A. V Nursing Rao, Esq.	Vizagapatam
S Pell, Esq.	Calcutta
Lieut. J. C. Ross, R E.	Meerut
Prince Jahán Qádr Mirzá Muhamad Wáhid-áli Bahádur.	Calcutta
W. Selbach, Esq.	Calcutta
Capt. G. E. Fryer.	Amherst British Burmah
J. H. Fisher, Esq., C. S.	Muttra
E. Hyde, Esq.	Calcutta
Bábu Yadulála Mallika.	Calcutta
Geo. Latham, Esq., C. S.	Calcutta
J. Westland, Esq., C. S.	Jessore
A. Allardyce, Esq	Serampore
J. G Delmerick, Esq.	Rawul Pindí
A. D. B. Gomes, Esq.	Sundarbans
B. Gray, Esq., M. B.	Lahor
A. Thomson, Esq.	Faizábád
R. A. Barker, Esq., M. D.	Serampore
Lieut. W. J. A. Wallace, R. E.	Calcutta

LOSS OF MEMBERS DURING 1869,

By retirement.

The Hon'ble C. P. Hobhouse.	Calcutta
A. Anderson, Esq.	Fyzabad
Col. II. Hopkinson.	Assam
J. Agabeg, Esq.	Calcutta
Capt. A. Rullan.	Dera Dhun
Bábu Kedáranátha Mukarjea.	Calcutta
T. Martin, Esq., C. E.	Midnapur
Lieut.-Co., P. S. Lumsden.	Simla
Capt. W. J. W. Muir.	Abu, Rajputana
A. E. Russell, Esq., C, S.	Burdwan
A. Mackenzie, Esq., C. S.	Calcutta
E. B. Harris, Esq., C. E.	Burdwan
G. W. Clive, Esq., M D.	Nagpur
E. Bonavia, Esq., M. D.	Lucknow
The Rev. J. Barton.	Calcutta
Bábu Bholánátha Chandra.	Calcutta
W. A. D. Anley, Esq.	Chapra, Sáran
J. B. N. Hennessy, Esq.	Mussuri
Bábu Digámvara Mitra.	Calcutta
N. S. Alexander, Esq., C. S.	Fureedpur
Dr. C. R. Francis.	Sagor
D. R. Onslow, Esq.	Calcutta

By the election being cancelled.

H. E. Perkins, Esq., C. S.	Hoshyárpur, Panjáb
J. W. Chisholm, Esq.	Bilaspur
Major W. A. Ross.	Simla
R. H. Renny, Esq	Goalpara

By death.

Lieut. Col. C D. Newmarch, R. E.	Oudh
C. Oldham, Esq.	Madras
J. B. Nelson, Esq.	Calcutta
J. G. Hicks, Esq.	Lahor
Rájá Satyasarana Ghoshála, C. S. I.	Bhumkailás
Bábu Sáradáprasáda Mukarjea.	Baraset
The Rev. M. D. C. Walters.	Calcutta

[APPENDIX.]

ABSTRACT STATEMENT

OF

RECEIPTS AND DISBURSEMENTS

OF THE

ASIATIC SOCIETY OF BENGAL

FOR

THE YEAR 1869.

STATEMENT

Abstract of the Cash Account

RECEIPTS.

		Rs.	a.	p.	1869. Rs.	a.	p.	1868. Rs.	a.	p.
Admission Fees.										
Received from New Members, ...	Rs.	1,632	0	0						
					1,632	0	0	1,280	0	0
Contribution.										
Received from Members,... ..		9,180	12	0						
					9,180	12	0	9,771	12	0
Journal.										
Sale proceeds of Journal and Proceedings of the Asiatic Society, ...		639	15	0						
Subscription to ditto, ...		917	0	0						
Refund of Postage Stamps, ...		36	14	0						
Ditto of Freight, ...		9	0	0						
Commission received from the Baptist Mission Press on the printing charges, ...		33	12	6						
					1,636	9	6	1,425	2	3
Library.										
Sale proceeds of Books, ...		491	4	0						
Ditto of Mahabharata, Vol. III. ...		16	0	0						
Ditto of a Copy of Index to ditto, ...		3	0	0						
Refund of Postage Stamps, ...		4	2	0						
Ditto of Freight, ...		23	0	0						
Received from the Indian Museum Sale proceeds of a Teakwood Almira &c., ...		215	0	0						
					752	6	0	479	11	6
Secretary's Office.										
Refund of Packing Charges, ...		1	2	6						
Ditto of Postage Stamps, ..		1	1	0						
Ditto of Paper supplied to Pandita, *(Consvn. of Sans. MSS.)*		1	10	0						
Ditto from Cashier, his excess of Salary for August last, ...		5	0	0						
					8	13	6	15	2	0
General Establishment.										
Received fine, ...		1	6	0						
					1	6	0	1	11	3
Vested Fund.										
Received Interest on the Government Securities from the Bank of Bengal for one year at 5½ per cent. on Rs. 2000, ...		110	0	0						
					110	0	0	110	0	0
Museum Catalogue.										
Refund from the Indian Museum of half the amount of a Bill for Rs. 791-10-9 for drawing out an inventory of the collections,... ...		395	13	4						
					395	13	4			
Carried over, Rs.					13,717	12	4			

No. 1.

of the Asiatic Society for 1869.

DISBURSEMENTS.

		1869	1868
CONTRIBUTIONS.			
Refund of Contribution to Major H. R. Thuillier, ... Rs.	60 0 0		
Fee for getting a Money Order for the above, ...	0 12 0		
Commission on Collecting Subscription bills, ...	44 4 0		
Refund of Contribution to S. Lobb, Esq., ...	24 0 0		
		129 0 0	50 5 3
JOURNAL.			
Freight for sending Journal and Proceedings to Messrs. Williams and Norgate, ...	76 0 0		
Lithographing and Engraving charges &c., ...	124 6 0		
Printing charges, ...	6,433 14 0		
Purchase of Postage Stamps, ...	148 2 0		
Commission on the Sale of Books, ..	73 4 0		
Packing charges, ...	4 8 0		
Binding a Book for the stock of the Journal, ...	4 6 0		
Petty charges, ...	5 15 6		
		6,870 7 6	7,807 8 9
LIBRARY.			
Salary of the Librarian, ...	840 0 0		
Establishment, ...	120 0 0		
Commission on Sale of Books, ...	42 7 3		
Purchase of Books, ...	1,052 10 0		
Landing charges on parcels received from Europe, ...	20 0 6		
Book binding, ...	201 4 0		
Salary of a Ticca writer for arranging the Library, ...	28 0 0		
Ditto of a Ticca Duftory for do. do. —	9 8 0		
Printing charges, ...	4 0 0		
Bearing postage, ...	1 14 0		
Petty charges, ...	9 0 9		
		2,328 12 6	2,830 8 11
SECRETARY'S OFFICE.			
General Establishment, ...	294 0 0		
Secretary's Office Establishment, ...	1,468 0 0		
Purchase of Postage Stamps, ...	49 14 2		
Ditto of Stationery, ...	23 2 0		
Insufficient postage, ...	3 11 0		
Bearing postage, ...	0 10 0		
Binding Letter files, &c. ...	10 0 0		
Purchase of a Sheet Almanac, ...	2 0 0		
Ditto of Army List, ...	25 0 0		
		1,876 5 2	
Carried over, Rs.		9,328 4 0	

RECEIPTS.		1869.	1868.
Brought over, Rs.		13,717 12 4	
MISCELLANEOUS.			
Refund of Banghy expenses from the Indian Museum on a box of agate and flint implements, ...	8 2 9		
Ditto ditto on a box of specimens, ..	7 8 3		
		15 11 0	
INDIAN MUSEUM.			
Refund of the amount paid for the Coral case as per Higgs and Halder, Bill No. 110 on the 15th February last, ...	300 0 0		
		300 0 0	
POSTAGE STAMP ACCOUNT.			
Received from Wallieoolah Syed, being the Balance of Postage Stamps, ...	21 13 4		
		21 13 4	
COMMISSION ACCOUNT.			
Received commission on purchase of Postage for Rs. 25-0-0 at ½ anna per Rupee, ...	0 12 6		
		0 12 6	
MESSRS. WILLIAMS AND NORGATE.			
Sale proceeds of a Copy of Matapariksha, ...	0 8 0		
Received from Syed Keramatali being the price of 2 Copies of Kamil, Vol. III and IV: ...	6 0 0		
Received by transfer to the Library and Miscellaneous account as per their order on Messrs. Gillanders, Arbuthnot and Co. paid on the 28th August 1869, £100 at 1-10-¾ per Rupee, ...	1,054 15 0		
		1,061 7 0	2,132 11
O. P. FUND.			
Refund of the amount paid for printing charges to the Baptist Mission Press on the 16th July 1868, ...	5 0 0		
Ditto ditto paid on the 30th June 1869, ...	54 5 9		
Received by transfer to Messrs. Williams and Norgate, Sale proceeds of Bibliotheca Indica, . 765 0 0			
Less paid them for freight, advertising charges and commission, ... 394 12 0			
	370 4 0		
		429 9 9	489 12 8
Rev H. A. Jäschke's, sale proceeds of his Thibetan Grammar, .	31 15 0		
		31 15 0	
Carried over, Rs.		15,579 0 11	

DISBURSEMENTS.		1869.	1868.
Brought over, Rs.		9,328 4 0	
...	1,876 5 2		
Ditto of Directory, ...	12 0 0		
Printing charges, ...	563 9 6		
Petty charges, ...	11 15 0		
		2,463 13 8	2,037 14 0
Vested Fund.			
Pd. Commission to the Bank of Bengal for drawing Interest on the Government Securities, ...	0 4 4		
		0 4 4	0 4 4
Conservation of Sanscrit MSS.			
Salary of the Travelling Pandita, ...	106 0 0		
Ditto for Compiling Catalogue of Sanscrit MSS.	87 0 0		
Travelling allowance, ...	61 8 6		
Transcribing the Ekámvara Purána from Uria to Nagri, ...	32 0 0		
Stationery, ...	31 15 0		
Printing 2000 Copies of Sanscrit Tabular Form, ...	70 0 0		
Copying MSS.	40 0 0		
Binding Sanscrit MSS.	11 10 9		
A Japanned Paper Box, ...	11 3 9		
Postage for sending letters &c to Travelling Pandita, ...	4 4 6		
Banghy Expenses for sending MS. ...	3 0 0		
		458 10 6	
Miscellaneous.			
Salary of the Mali, ...	57 0 0		
Meeting Charges, including Oil, &c., ..	200 10 3		
Advertising Charges, ...	27 8 0		
Railway Charges on a Box of agate and flint implements, ...	8 2 0		
Ditto ditto on a Box of Specimens, ...	7 8 3		
Purchase of a Petty Charges Book,	1 2 0		
Repairing the Clock, ...	30 0 0		
Fee for Stamping 25 cheques, ...	1 9 0		
Proportional Exchange on a Bill of £100, ...	54 15 0		
Petty charges, ...	27 14 9		
		416 5 3	577 4 0
Indian Museum.			
Pd. Higgs and Halder for supplying, a Teakwood polished Coral case, ...	300 0 0		
		300 0 0	
Catalogue of Persian MSS.			
Pd. Munshi Abdul Hakim his Salary, for Cataloguing the Persian and Arabic MSS. in November last, ..	30 0 0		
		30 0 0	
Zoological Garden.			
Pd. Printing Charges, ...	12 0 0		
		12 0 0	
Carried over, Rs.		13,009 5 9	

RECEIPTS.		1869.	1868.
Brought over, Rs.		15,579 0 11	
C. HORNE, ESQ.			
Refund of the amounts paid on the 15th July 1867 and 16th July 1868,	7 9 0		
		7 9 0	
BÁBU RÁJENDRALÁLA MITRA.			
Refund of the amount paid on the 8th December 1868 and 1st June 1869,	8 0 0		
		8 0 0	
DR. A M. VERCHERE.			
Refund of Postage Stamps paid for sending Library Books, ...	0 9 0		
		0 9 0	
MOULVI ABDUL LUTEEF KHAN.			
Refund of the amount paid on the 11th December 1868, ...	1 8 0		
		1 8 0	
THE SECRETARY OF THE ELPHINSTONE INSTITUTION.			
Refund of the amount paid on the 30th April 1869, ...	2 0 0		
		2 0 0	
BÁBU UDAYACHÁNDA DATTA.			
Refund of Postage Stamps paid for sending Library Books, ...	0 11 0		
		0 11 0	
E. C. BAYLEY, ESQ.			
Refund of Banghy Expenses and Postage &c., for sending Books, ...	11 1 0		
		11 1 0	
H. BLOCHMANN, ESQ.			
Refund of the amount paid on the 10th September 1868, ...	2 0 0		
		2 0 0	
PRASANNA CUMÁRA THAKURA.			
Refund of Freight paid for sending Books to England on the 8th December 1868, ...	12 8 0		
		12 8 0	
J. G. DELMERICK, ESQ.,			
Received in deposit, ...	6 6 0		
Refund of Postage Stamps for sending Library Books, ...	1 2 0		
		7 8 0	
GOVERNMENT NORTH WESTERN PROVINCES.			
Refund of Freight for sending Journal and Proceeding of 1868, ...	12 11 0		
		12 11 0	
G. SHELVERTON, ESQ.			
Refund of the amount paid for cashing his draft, ...	0 5 9		
		0 5 9	
W OLDHAM, ESQ.			
Refund of the amount paid for on the 31st May, ...	2 11 0		
Ditto of Freight, ...	4 0 0		
		6 11 0	
Carried over, Rs.		15,652 2 8	

DISBURSEMENTS.			1869.	1868.
Brought over, Rs.			13,009 5 9	
Building.				
Pd. Assessment, ...		456 0 0		
Ditto Lighting rate, ...		96 0 0		
Ditto Police rate, ...		144 0 0		
Ditto Petty charges, ...		1 12 0		
			697 12 0	1,136 8 3
Messrs. Williams and Norgate.				
Paid Book Postage for sending 14 parcels of Books, ...		8 8 6		
Do. Messrs. Gillanders, Arbuthnot and Co. as per their order £100 at 1 *s.* 10¾ *d.* per Rupee, ...		1,054 15 0		
Do. by transfer on account of Sale of Bibliotheca Indica, £76 10 0				
Deduct freight, advertising & Commission charges, ... £39 9 6				
£37 0 6	Rs. 370 4 0			
Do. do. on account of Sale of Library's Books and Journal Asiatic Society £5-5-10 at 2s. 52 14 0				
Deduct 10 per cent. commission, ... 5 4 0	47 10 0			
		417 14 0		
			1,481 5 6	1,955 0 0
O. P. Fund.				
Paid on Loan, ...		79 3 0		
			79 3 0	
Bábu Rájendralála Mitra.				
Paid to the Baptist Mission Press for printing charges, ...		2 0 0		
			2 0 0	
Bábu Udayachánda Datta.				
Paid Postage Stamps for sending Library Books, ...		0 11 0		
			0 11 0	
E. C. Bayley, Esq.				
Paid Postage and Banghy expenses for sending Books, ...		11 1 0	11 1 0	
Carried over, Rs.			15,281 6 3	

RECEIPTS.		1869.	1868.
Brought over, Rs.		15,652 2 8	
CURATOR OF THE RIDDELL MUSEUM.			
Received in deposit, ...	12 0 0	12 0 0	
F. S. GROWSE, ESQ.			
Refund of the amounts paid on the 31st January 1867 and 31st January 1869, ...	1 0 0	1 0 0	
DR. G. W. CLINE.			
Refund of the amount paid on the 30th June 1868, ...	0 3 0	0 3 0	
M. MACAULIFFE, ESQ.			
Refund of the amount paid on the 30th November 1868, ...	0 3 0	0 3 0	
MAJOR F. W. STUBBS.			
Received in deposit, ...	1 12 0	1 12 0	
G. NEVILL, ESQ.			
Refund of the amounts paid on the 7th July and 1st September 1869,...	2 6 0	2 6 0	
MAJOR MCMAHON.			
Received in deposit, ...	0 6 0	0 6 0	
R. H. WILSON, ESQ.			
Received in deposit, ...	1 7 0	1 7 0	
S. KURZ, ESQ.			
Refund of the amount paid on the 7th July 1869, ...	4 4 0	4 4 0	
W. L. HEELEY, ESQ.			
Refund of the amount paid on the 31st May 1869,—	1 8 0	1 8 0	
DR. J. FAYRER.			
Refund of the amount paid on the 1st June 1869, ...	6 8 0	6 8 0	
A. S. HARRISON, ESQ.			
Received from him for Books supplied	11 2 0	11 2 0	
B. QUARITCH, ESQ.			
Received in deposit, ...	0 9 0	0 9 0	
CAPT. M. W. CARR,			
Received in deposit, ...	4 2 0	4 2 0	
S. LOBB, ESQ.			
Received in deposit, ...	6 6 0	6 6 0	
Carried over, Rs.		15,705 14 8	

DISBURSEMENTS.		1869.	1868.
	Brought over, Rs.	15,281 6 3	
H. BLOCHMANN, ESQ.			
Paid freight for sending Books to England, ...	0 10 0		
Do. to the Baptist Mission Press for printing charges, ...	3 0 0		
Do. Books purchased through A. S. Harrison, Esq., ...	6 7 0		
		10 1 0	
J. G. DELMERICK, ESQ.			
Paid Postage for sending Library Books, ...	1 2 0		
Refunded the amount by Postage Stamps received on the 10th September, 1869, ...	6 6 0		
		7 8 0	
GOVERNMENT NORTH WESTERN PROVINCES.			
Paid freight for sending Journal and Proceedings for 1869, ...	18 2 0		
		18 2 0	
G. SHELVERTON, ESQ.			
Paid discount for cashing his draft, ...	0 4 0		
		0 4 0	
W. OLDHAM, ESQ.			
Paid Postage and freight for sending Library Books, &c., ...	7 7 0		
		7 7 0	
F. S. GROWSE, ESQ.			
Paid Postage for sending Library Books, ...	0 15 0		
		0 15 0	
DR. G. W. CLINE.			
Paid by transfer to the Asiatic Society,	10 0 0		
		10 0 0	
MAJOR F. W. STUBBS.			
Paid Bullock-train hire and packing charges for sending Library Books,	5 2 3		
		5 2 3	
G. NEVILL, ESQ.			
Paid to the Baptist Mission Press for printing charges, ...	2 6 0		
		2 6 0	
S. KURZ, ESQ.			
Paid to the Baptist Mission Press, for printing charges, ...	4 4 0		
		4 4 0	
W. L. HEELEY, ESQ.			
Paid Banghy expenses for sending Library Books, ...	1 8 0	1 8 0	
DR. J. FAYRER.			
Paid to the Baptist Mission Press, for printing charges, ...	6 8 0		
		6 8 0	
	Carried over, Rs.	15,355 7 6	

RECEIPTS.		1869.	1868.
Brought over, Rs.		15,705 14 8	
H. F. BLANFORD, Esq.			
Refund of freight paid for sending 44 Parcels of Books to England, ..	14 0 0	14 0 0	
WALLIULLAH SYED.			
Received by transfer the Postage Stamp, ...	39 9 2	39 9 2	
DR. T. OLDHAM.			
Refund of the amount paid on the 5th October, 1868, ...	5 5 0	5 5 0	
Carried over, Rs.		15,764 12 10	

DISBURSEMENTS.		1869.	1868.
Brought over, Rs.		15,355 7 6	
H. F. BLANFORD, ESQ.			
Paid freight for sending 44 parcels to England, ...	14 0 0	14 0 0	
WALLIULLAH SYED.			
Paid Postage expenses for current expenditure, ...	119 12 10	119 12 10	
DR. T. OLDHAM.			
Paid to the Baptist Mission Press, for printing charges, ...	5 5 0	5 5 0	
LT.-COL. A. S. ALLAN.			
Paid by transfer to the Asiatic Society on account of contributions, ...	7 4 0	7 4 0	
W. STOKES, ESQ.			
Paid proportional freight and postage for sending Books, ...	0 5 0	0 5 0	
MAJOR H. H. GODWIN-AUSTEN.			
Paid Postage for sending a parcel received from London, ...	0 1 0	0 1 0	
DR. F. STOLICZKA.			
Paid to the Baptist Mission Press, for printing charges, ...	8 12 0	8 12 0	
W. T. BLANFORD, ESQ.			
Paid to the Baptist Mission Press, for printing charges, ...	2 0 0	2 0 0	
MADRAS CLUB.			
Paid discount for cashing Madras Currency note, ...	0 4 0	0 4 0	
G. E. KNOX, ESQ.			
Paid Postage for sending Library Books, ...	0 12 0	0 12 0	
COL. C. L. SHOWERS.			
Paid exchange to the Uncovenanted Service Bank on his draft for Rs. 72,	1 0 0	1 0 0	
W. A. BYRNE, ESQ.			
Paid Madan Mistry for making two Insect Boxes, ...	4 8 0		
Do. freight for sending do. ..	2 12 0	7 4 0	
REV. H. A. JAESCHKE.			
Refunded the amount to Messrs. Schroeder, Smith and Co., ..	34 5 0	34 5 0	
Carried over, Rs.		15,556 8 4	

	RECEIPTS.	1869.	1868.
	Brought ovor, Rs.	15,764 12 10	
Balance of 1868.			
In the Bank of Bengal, ...	... 2,261 10 9		
Cash in hand, ...	... 92 9 7		
		2,354 4 4	
	Rs.	18,119 1 2	

DISBURSEMENTS.		1869.	1868.
	Brought over, Rs.	15,556 8 4	
Dr. J. Muir.			
Paid Rev. K. M. Banerjea, ...	101 6 0	101 6 0	
Lt. H. A. Spearman.			
Paid freight and packing charges for sending Journal, ...	7 8 0	7 8 0	
W. Theobald, Esq.			
Paid freight and packing charges for sending Library Books, ...	7 12 3	7 12 3	
W. Duthoit, Esq.			
Paid Banghy expenses and packing charges for sending Books, ...	2 14 0	2 14 0	
Col. E. T. Dalton.			
Paid Banghy expenses for sending Photographs, ...	0 10 3	0 10 3	
Col. E. T. Dalton, Ethnology of Bengal.			
Paid Banghy expenses and packing charges for sending Photographs, ..	3 0 0	3 0 0	
James Beames, Esq.,			
Paid Banghy expenses for sending Library Book, ...	1 6 0	1 6 0	
		15,681 0 10	
Balance.			
In the Bank of Bengal account Dr. J. Muir, 898 10 0			
Do. do. Asiatic Society, 1,411 4 7	2,309 14 7		
Cash in hand, ...	128 1 9	2,438 0 4	
	Rs.	18,119 1 2	

Examined,
Sd. Pratápachandra Ghosha.
Asst. Secry.
Asiatic Society, Bengal.

Errors and Omissions excepted,
Sd. Buddinath Bysack,
Cashier,
Asiatic Society, Bengal.

Audited and found correct,
R. Temple, K. C. S. I.
D. Waldie, F. C. S.

STATEMENT

Abstract of the Cash Account

RECEIPTS.

		1869.	1868.
Oriental Publication.			
Received by Sale of Bibliotheca Indica,	2,798 12 6		
Ditto by Subscription to do. ...	143 14 0		
Ditto by Sale of Srauta Sutra, ...	57 0 0		
Refund of commission on Sale of Books from P. Ghosha, ...	2 8 0		
Ditto of postage and packing charges,	74 12 0		
		3,076 14 6	2,938 7 3
Government Allowance.			
Received from the General Treasury at 500 Rupees per month, ...	6,000 0 0		
		6,000 0 0	6,000 0 0
Ditto ditto additional grant for the publication of Sanscrit works at 250 Rupees per do. from April to November 1869, ...	2,000 0 0		
		2,000 0 0	
Vested Fund.			
Received Interest on the Government Securities the Bank of Bengal, ...	212 8 0		
Ditto by Sale of Government Security,	1,500 0 0		
Ditto Premium by Sale of ditto, ...	136 14 0		
Ditto Interest by Sale of ditto, ...	15 10 0		
		1,865 0 0	4,410 6 1
Custody of Oriental Publications.			
Refund from the Cashier his excess Salary for August 1869, ...	2 8 0		
		2 8 0	14 7 0
Ain i Ákbari.			
Received from the Right Hon'ble the Secretary of State for India for the additional Grant to the Asiatic Society towards the publication of the Ain i Ákbari, ...	5,000 0 0		
		5,000 0 0	
Asiatic Society of Bengal, ...	79 3 0		
Maha Raja Pertap Sing, ...	55 0 0		
V. B. Soobiah, Esq., ...	8 9 0		
K. Roghu Nath Row, ...	35 0 0		
Kálidása Mookerjea, ...	2 5 0		
Challapali Rangaiya, ...	11 13 0		
Thakura Giriprasád, ...	36 2 0		
Damura Vallabha, ...	6 0 0		
V. M. Pundit, ...	0 10 0		
F. Samasa Charyar, Esq., ...	0 2 0		
Babu Brajabhushana Dása, ...	30 0 0		
J. Pickford, Esq., ...	0 2 0		
Desia Santgram Sivakram, ...	50 0 0		
Kesavachandra Ácharji, ...	11 15 0		
	326 13 0		
Carried over, Rs.		17,944 6 3	

No. 2.

Oriental Fund for 1868.

DISBURSEMENTS.		1869.	1868.
ORIENTAL PUBLICATIONS.			
Paid commission on the Sale of Books,	280 12 6		
Freight, ...	296 12 0		
Packing charges, ...	61 3 0		
Purchase of Postage Stamps, ...	199 13 6		
Advertising charges, ...	247 0 0		
Paper for printing Bibliotheca Indica,	38 1 0		
Petty charges, ...	12 10 6		
		1,136 4 6	1,179 11 9
VESTED FUND.			
Paid commission to the Bank of Bengal for drawing interest on the Government Securities, ...	0 8 6		
Ditto on selling the Government Security, ...	4 2 1		
Ditto Brokerage for do.	1 14 0		
Ditto fee for renewing the Government Security, ...	2 0 0		
		8 8 7	14 0 10*
CUSTODY OF ORIENTAL WORKS.			
Paid Salary of the Librarian, ...	360 0 0		
Establishment, ...	626 12 9		
Book binding, ...	30 12 0		
Binding 2 Stock Books with papers, ...	52 8 0		
Fee to the Bank of Bengal for stamping cheques, ...	3 2 0		
Stationery, ...	67 7 0		
Printing charges, ...	98 8 0		
Repairing 2 Book cases, ...	183 0 0		
Preparing charges, ...	19 9 6		
24 Tin Boxes for sending Bibliotheca Indica, ...	7 10 0		
Ticca Duftory for arranging Bibliotheca Indica, ...	14 8 0		
Cart and cooley hire for removing do.,	22 10 6		
Petty charges, ...	28 2 6		
		1,514 10 3	1,518 5 0
LIBRARY.			
Purchase of MSS. and Books, ...	484 4 6		
Fee for getting 4 Money Orders at 100 Rs. each, ...	4 0 0		
Kharuah cloth and piece board and tape &c., for binding MSS. ...	15 3 9		
		503 8 3	603 7 0
COPYING MSS.			
Copying charges for Persian MS., ...	71 0 0		
Papers for copying do.	6 0 0		
		77 0 0	37 3 0
	Carried over, Rs.	3,239 15 7	

RECEIPTS.				1868.			1869.
Brought forward, Rs.	326	13	0	17,944	6	6	
Tárini Charana Chackravartí, ...	10	10	0				
Rámakrishna G. Bhudakar, ...	0	12	0				
A. Cadell, Esq., ...	3	14	0				
J. H. Lloyd, Esq., ...	3	11	0				
A. S. Harrison, Esq., ...	1	8	0				
Capt. Valadeva Pant, ...	1	14	0				
P. Swaminatha Jyer, ...	3	4	0				
H. D. Hawkins, Esq., ...	0	1	6				
Ramswami B. Eaider, ...	12	8	0				
Pundit Rumgoo, ...	6	12	0				
				371	11	6	
Carried over, Rs.				18,316	2	0	

DISBURSEMENTS.				1869.			1868.		
Brought forward, Rs.				3,249	15	7			
Ain i Ákbari.									
Paid Salary to Munshi, ...	390	0	0						
Ditto printing charges, ...	2,133	3	0						
Ditto 16 plates for the Ain i Akbari,...	334	0	0						
Ditto Engraving a plate for ditto, ...	8	11	3						
Ditto Lettering on stones of 2 plates,	4	0	0						
Ditto 2 copies of Ain i Akbari, ...	87	8	0						
				2,957	6	3	2,074	13	0
Alamgir Námáh.									
Paid for preparing the Index and Preface of do.	80	0	0						
				80	0	0			
Tarikhi Bídaoni.									
Paid Editing and printing charges. ...	761	0	0						
Ditto extra work in composing the Preface of do.	30	0	0						
				791	0	0	2,113	0	0
Mimánsa Darsana.									
Paid Editing and printing charges, ...	331	2	0						
				331	2	0			
Taittiriya Bráhmana.									
Paid Editing charges, ...	144	0	0						
				144	0	0	224	0	0
Grihya Sutra of Aswaláyana.									
Paid Editing and printing charges, ...	613	4	0						
				613	4	0	672	0	0
Secundar Námá Behari.									
Paid Editing charges, ...	75	0	0						
				75	0	0			
Taittiriya Upanishada.									
Paid Editing and printing charges, ...	762	0	0						
Ditto Banghy expenses for sending 2 parcels of do.	5	0	0						
				767	0	0	820	9	0
Taittiriya Sanhita of the B. Y. Veda.									
Paid Editing and printing charges, ...	280	12	0						
				280	12	0	364	14	0
Umar i Kheyani.									
Paid copying charges of MS. ...	15	0	0						
				15	0	0			
Muntákháb al Lubáb of Kháfi Khán.									
Paid Editing and printing charges, ...	2,088	10	0						
Ditto advance for do. do. Vols. XI & XII.	500	0	0						
				2,588	10	0	876	0	0
Tándya Máhá Bráhmana.									
Paid Editing and printing charges, ...	328	3	0						
				328	3	0			
Bátsáyan Cámi Sutra.									
Paid Transcribing charges, ...	6	3	0						
				6	3	0			
Vaya Purana, ...	1	8	0						
				1	8	0			
Poems of Chand, ...	6	2	3						
				6	2	3	13	8	0
Carried over, Rs.				12,225	2	1			

RECEIPTS.		1869.	1868.
Brought forward, Rs.		18,316 2 0	
BALANCE OF 1868.			
In the Bank of Bengal, ...	115 15 8		
Cash in hand,...	0 0 0		
		115 15 8	
Rs.		18,432 1 8	

DISBURSEMENTS.		1869.	1868.
Brought forward, Rs.		12.225 2 1	
Asiatic Society of Bengal, ...	421 9 9		489 12 8
Babu Tarinicharana Chackravarti, ...	10 10 0		
Babu Brajabhushana Dása, ...	26 1 0		
F. Samasa Charyur, Esq., ...	0 2 0		
Captain Valadeva Pant, ...	2 5 0		
Challapali Rangaiya, ...	11 13 0		
Damura Vallabha, ...	1 13 0		
Ramswami B. Eaider, ...	12 8 0		
Thakura Griprasad Sing, ...	31 0 0		
V. B. Soobiah, ...	18 9 0		
J. W. McCrindle, ...	30 8 6		
J. H. Lloyd, Esq., ...	3 11 0		
		573 10 3	
BALANCE OF 1869.		12,798 12 4	
In the Bank of Bengal, ...	5,559 8 1		
Cash in hand, ...	73 13 3		
		5,633 5 4	
	Rs.	18,432 1 8	

Examined,
Sd. PRATÁPACHANDRA GHOSHA.
Asst. Secry.
Asiatic Society, Bengal.

Errors and Omissions excepted,
Sd BUDDINATH BYSACK.
Cashier,
Asiatic Society, Bengal.

Audited and found correct,
R. TEMPLE, K. C. S. I.
D. WALDIE, F. C. S.

STATEMENT, No. 3.

Shewing the Assets and Liabilities of the Asiatic Society of Bengal.

ASSETS.	1869.			1868.		
Cash.						
In the Bank of Bengal, viz. :—						
Account Dr. J. Muir, Rs. 898 10 0						
Account Asiatic Society, ... 1,411 4 7	2,309	14	7	2,261	10	9
Cash in hand, ...	128	1	9	92	9	7
Government Securities. ...	2,000	0	0	2,000	0	0
	4,438	0	4	4,354	4	4
Outstanding.						
Subscription, ...	6,266	5	8	6,369	5	8
Admission fees, ...	256	0	0	416	0	0
Library—Sale of Books, ...	426	8	0	310	12	0
Journal—Subscription, ..	980	12	0	906	9	0
Ditto, Sale ditto, ...	481	8	9	274	12	9
Conservation of Sanscrit MSS. ...	458	10	6	0	0	0
Sundries, ...	96	5	0	0	0	0
Rs.	8,966	1	11	8,277	7	5

Examined.
Sd. Prátápachandra Ghosha.
Asst. Secry.
Asiatic Society, Bengal.

LIABILITIES.	1869.			1868.		
Salary and Establishment, Rs.	234	14	8	260	0	0
Baptist Mission Press, ...	1,000	0	0	3,781	5	3
Dr. J. Muir.	898	10	0	1,000	0	0
Messrs. Williams and Norgate, ...	600	0	0	642	0	0
Plates for Journal and Proceedings (of 1869), ...	367	10	6	0	0	0
O. P. Fund, ...	104	0	7	0	0	0
Rs.	3,205	3	9	5,683	5	3

Errors and Omissions Excepted,
Sd. Buddinath Bysack,
Cashier,
Asiatic Society, Bengal.

Audited and found correct,
R. Temple, K. C. S. I.
D. Waldie, F. C. S.

STATEMENT, No. 4.

Shewing the Assets and Liabilities of the Oriental Publication Fund of 1869.

ASSETS.		1869.			1868.		
In the Bank of Bengal,	Rs.	5,559	8	1	115	15	8
Cash in hand, ...	..	73	13	3	0	0	0
Government Securities,	...	3,500	0	0	5,000	0	0
Bibliotheca Sale and Subscription,	...	792	7	3	672	6	9
Government allowance for December 1869, ...	..	750	0	0	500	0	0
of Bengal,	...	104	0	7	0	0	0
Total, Rs.		10,779	13	2	6,288	6	5

Examined.
Sd. PRÁTAPACHANDRA GHOSHA,
Asst. Secy.
Asiatic Society, Bengal.

LIABILITIES.	1869.			1868.		
Salary and Establishment for December, 1869, ...	77	13	4	90	0	0
Printing charges, ...	100	0	0	0	0	0
Total, Rs.	1,077	13	4	0	0	0

Errors and Omissions Excepted,
Sd. BUDDINATH BYSACK,
Cashier.
Asiatic Society, Bengal.

Audited and found correct,
R. TEMPLE, K. C. S. I.
D. WALDIE, F. C. S.

PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL

FOR MARCH, 1870.

The monthly Meeting of the Society was held on Wednesday, the 2nd instant, at 9 o'clock P. M.

The Hon'ble J. B. Phear, President, in the chair.

The minutes of the last monthly Meeting were read and confirmed.

The receipt of the following presentations was announced :—

1. From Dr. Mohendralála Sarkára, a copy of Calcutta Journal of Medicine, Vol. II, Nos. 9 and 10.

2. From Colonel J. E. Gastrell, a very fine specimen of *Macrocheira Kaempferi*, from Japan, and a specimen of a large *Ostrea*, also from Japan.

3. From Bábu Yatíndramohana Thákura, a copy of Sangita Sára.

The following gentlemen are candidates for ballot at the next Meeting :—

Capt. R. D. Osborn, B. Staff Corps, proposed by Dr. F. Stoliczka, seconded by Lt.-Col. H. Hyde.

R. Stewart, Esq., proposed by Lt.-Col. Hyde, seconded by Dr. Stoliczka.

Benjamin Smith Lyman, Esq., proposed by Dr. Stoliczka, seconded by Mr. H. Blochmann.

Dr. T. W. Innis, C. B., proposed by Lt.-Col. H. Hyde, seconded by H. F. Blanford, Esq.,

Col. A. D. Dickens, C. B., proposed by Lt.-Col. H. Hyde, seconded by the Hon'ble J. B. Phear.

The following gentlemen have intimated their desire to withdraw from the Society :—

R. J. Richardson, Esq., B. C. S., Dr. J. M. Coates, Bábu Abhayacharana Mallika, Dr. R. H. Curran.

The following letter received from Col. G. H. Saxton, through Col. H. Thuillier, relating to a recent fall of an Aerolite near Nidigullam (Vizagapatam district), was read :

Camp Parvatypore, Vizagapatam District, January 27th, 1870.

I have just seen a very interesting specimen of an Aerolite, which fell near this, last Sunday, 23rd January, 1870. I have made an official application to the Madras Government, asking it to authorize its being given over to me for the purpose of being sent to our Calcutta Museum. In the mean time, I enclose a rough sketch, shewing the size, shape and striated markings of it. One end is broad, and quite smooth, with a polish. The whole appears pure iron or steel. The striæ are all obliquely in the direction of its elongation, and are very pretty. The length is about 6½ inches, the breadth between 4 and 5, and the thickness varies considerably; on the heel or sole-like end, which is polished, the surface is broad and flat, 2 or 3 inches, it then becomes thinner, but irregularly, and the other end is almost sharp; but I hope to have the pleasure of sending the specimen itself.

It penetrated about 20 inches into the ground where it fell. Now for a description, from hearsay, of the circumstances attending the fall. The local European officer who has charge of it tells me, that he did not see the meteor, but he heard the noise, which he likens to that caused by a house falling down. Others describe the noise more as that of an explosion, with subsequent prolonged rumblings. Those who saw the meteor, describe it as being very large and beautiful, and as bursting with increased brilliance at the time of the explosion. All agree that it passed over this place from the north to south, and the village where it fell is just about 6 miles almost due south from this. It is given on the Atlas sheet, No. 108 at Lat. 18-41-20 and Long. 83-28-30 as "Nidigullam." At this village itself the people were greatly alarmed. Some received violent shocks, and a man near to whom it fell, was stunned. This I hear from the Sub-Magistrate who, with others from this place, went to the village, and took possession

of the Aerolite, which the villagers had carried to their temple and under much alarm were making púja to. There is not the least appearance of any stony substance mixed with what seems to be well purified iron. It weighs 407 tolas, or about 10 pounds.*

Dr. Stoliczka observed that should this Aerolite really prove to be iron, it would be the first from India, but the strong striation on the crust seems rather to indicate that the specimen is a stone, though probably containing a very large percentage of iron, as does for instance the Mooltan Aerolite, which fell some short time ago.

From C. A. Elliott, Esq., C. S., Futtehgurh, a letter referring to the translation of the Hindí Epic, called the Alkhund.—Mr. Elliott says that he has translated about two-thirds of the work, and that he has prepared an abstract of it for the Society's Journal, which he hopes soon to forward to the Society. The work itself contains about 20,000 lines, though there is a great deal of repetition in it. The text of the poem, Mr. Elliott says, sadly needs recension, and a local printer has expressed his willingness to print the work from Mr. Elliott's MS.

The Council reported that they have elected the following gentlemen to serve in the several sub-Committees :—

SUB-COMMITTEES FOR 1870.

FINANCE.

Dr. S. B. Partridge.
H. F. Blanford, Esq.

LIBRARY.

Dr. T. Oldham.
W. S. Atkinson, Esq.
Bábu Rájendralála Mitra.
Dr. J. Anderson.
G. Nevill, Esq.
J. Wood Mason, Esq.
C. H. Tawney, Esq.
V. Ball, Esq.

PHILOLOGY, ARCHÆOLOGY, &C.

E. C. Bayley, Esq.
The Rev. J. Long.

C. H. Tawney, Esq.
Bábu Rájendralála Mitra.
Moulavie Abdul Luteef Khan Bahádur.
Bábu Yátindramohana Thakura.
The Rev. K. M. Banerjee.
Dr. Mohendralála Sarkára.

NATURAL HISTORY, INCLUDING PHYSICAL SCIENCE.

Dr. T. Oldham.
Dr. J. Fayrer, C. S. I.
H. F. Blanford, Esq.
Dr. S. B. Partridge.
W. S. Atkinson, Esq.
Dr. J. Ewart.
Bábu Devendra Mallika.
H. B. Medlicott, Esq.
V. Ball, Esq.
D. Waldie, Esq.
Dr. Mohendralála Sarkára.
Dr. J. Anderson.
Col. H. L. Thuillier.
The Ven'ble Archdeacon J. H. Pratt.
J. Wood Mason, Esq.

COINS.

E. C. Bayley, Esq.
Bábu Rájendralála Mitra.
Major F. W. Stubbs.
Rev. M. A. Sherring.

THE COMMITTEE OF PAPERS.

The Members of the Council.

The following papers were read :

I.—NOTES ON INDIAN HERPETOLOGY,—*by Dr.* T. C. Jerdon.

Rec. 1*st February*, 1870.

As some time will probably elapse before my work on the Reptiles of India can be published, I think it advisable to lay before the Society a short account of some recent discoveries in Indian Herpetology, a few of which are the result of my own researches, and very many from the most successful labours of Major Beddome, Conservator of Forests in Madras.

Many years ago, in the Society's Journal for 1853, Vol. XXII, p. 462 and 522, I gave a summary of the Reptiles of Southern India. After the first part had been written, I was suddenly removed to a distant station, and was unable to take my type specimens with me, and they were unfortunately never again seen by me, having been lost or destroyed; but, to complete the paper, I gave a very brief notice of the *Ophidia* and *Batrachia*, naming several new species of the former, and many of the latter order. Most of the *Ophidians* have been found again, but till recently hardly any of the *Batrachians;* and it was a source of great satisfaction to me when Major B e d d o m e, who had previously chiefly confined his attentions to *Ophidians*, partly at my earnest solicitations, directed his researches to *Lizards* and *Batrachians;* and he has re-discovered most of my supposed new species noticed in the Journal, and has also found very many new *Saurians* and a few *Batrachians*. Science owes him a large debt of gratitude for successfully working out the Reptile Fauna of Southern India; and I, on my own part, beg him to accept my best thanks for giving me the opportunity of making known accurately the species collected by myself a quarter of a century ago.

I propose in my work on the Reptiles of India to include those of Assam, the Khasi hills, Cachar, Sylhet, Tipperah, and Chittagong, stopping however at Arracan which, with the rest of the Burmese provinces, has already been given by Mr. T h e o b a l d in his Catalogue of Burmese Reptiles, and who, I am glad to say, is making many additions to his former collections, and will, I hope, duly publish the result in a separate form. I shall also include the Reptiles of Ceylon, and this addition to the extent of my Indian province will, I hope, make the work of much greater value.*

In the present notice I shall take Dr. G ü n t h e r's "*Reptiles* of British India" as the ground work of my observations.—

I have hardly any new Chelonian Reptiles to add to the Indian Fauna, but have to record three not hitherto known in our province as just defined.—*Manouria emys* is not uncommon in the hills of

* I propose, if my health will permit me, to give a second edition of the "Birds and Mammals" of India, with the addition of species from the districts noted above, making them of greater use to the Indian naturalist.

North Cachar, where fine and large specimens were obtained by Major Godwin-Austen, and from enquiries I made, it extends still further west to the Jaintia hills. This gentleman has presented some specimens to the Indian Museum, one of which measures 22 inches. This Tortoise, hitherto recorded from Burma, differs from all other forms in the pectoral plates not meeting in the centre of the plastrum.

The same zealous naturalist also obtained a few shells of what appears to be *Pyxidea Mouhotii*, figured by Dr. Günther, and recorded as from Siam. He has presented specimens of this also to the Indian Museum.

Cyclemys dentata of Bell, the prior name of which appears to be *Emys dhor*, Gray* per Buchanan Hamilton's MS. name, and which was afterwards called *Emys dentata* by Gray in Hardwicke's Ill. Ind. Zoology, must be added to the Indian Fauna. It is by no means rare in the upper provinces. I first saw it at Delhi, where it was called *Dhád*, (evidently a form of the same word as B. Hamilton's), and afterwards at other places.

Günther has figured with Gray's MS. name, a Tortoise as *Cyclemys Oldhami* from Burmah. Theobald says that the very specimen figured was taken by himself, and is merely an old specimen of *orbiculata*. It was 8 inches long, and the figure in Günther shows a more oval form than the largest specimen in the Indian Museum, and the vertebral plates differ slightly.—I have quite recently obtained in the Sylhet district a very fine specimen of a *Cyclemys* which is of a still more elongated form, the sides being almost parallel, and, though differing in some parts, much more resembles Günther's figure than any specimens of true *orbiculata*, the name of which, as given by Bell, announces its very rounded form. This specimen is 15¾ inches long on a straight line, and 10½ broad, by about 5½ in height. It is of an uniform blackish colour above and below.

It differs from Günther's figure in being a more elongated oval form, but agrees very nearly with the description, with the following exceptions. The first two of the middle vertebral plates are dis-

* Described and figured in Gray's Synops. Rept, p. 20, pl. 8 and 9. A work not in Calcutta, I believe.

tinctly longer than broad, whilst Günther says "the three middle vertebral plates as *long* as *broad*," which applies exactly only to the third in the series. The postgulars are shorter, the suture between them not being nearly so long as the postgulars; the pectorals are not nearly so long as the abdominals, and the suture between them is not so much arched as in Günther's figure; the preanals are little shorter than the abdominals; the anals are rather longer than broad, and bluntly pointed behind, whilst in two specimens noted by Dr. Günther, they are as broad as long in one, and broader in the other. On the whole I do not consider that the differences here noticed suffice for specific separation from *C. Oldhami* as described by Günther, but the whole aspect and structure of the shell appears to point out a difference from *C. dhor* or *C. orbiculata.* However, till young specimens of various ages from the same localities are obtained, no satisfactory conclusion can be arrived at. Dr. Günther entirely ignores *C. dhor*, or *orbiculata*, as a species of British India, and therefore does not point out the differences from that species which his adoption of Gray's MS. name of *Oldhami* would imply him to believe in.

The margin of *Geoemyda carinata*, Blyth, is entire behind. The type specimen so completely resembles the figure of *Emys Belangeri*, Lesson, figured in Bélang.'s voyage (Rept. pl. 1), that I am constrained to believe them identical. This figure has been hitherto usually assigned as a synonym of *Emys trijuga*; the original was said to have been taken near Calcutta, which Blyth doubted, never having seen that species in lower Bengal, though it abounds in Southern India and Burma. The figure, if intended for *E. trijuga*, is certainly, as Günther remarks, *not good*; but on the contrary it is a very fair representation of Blyth's species, and as such I shall accordingly consider it, and note in my Reptiles of India.

Pangshura Sylhetensis, n. sp.

I lately procured from the stream that runs from the Terria Ghat at the foot of the Khasi hills several specimens of a new tortoise closely resembling *P. tecta*, but differing in the following points. The posterior margin of the shell is very strongly serrated, this effect being added to by a division of the hinder marginal plates;

the last vertebral plate too is much narrower posteriorly, being pointed behind in the largest specimen; the lateral suture of this plate is continuous with the suture dividing the penultimate marginal plate from the one next above it, whilst in typical *tecta* the lateral margin joins the centre of the penultimate plate. The first two vertebral plates are less strongly ridged. The 4th vertebral does not appear to differ in shape from that of *tecta*. The plastrum also does not differ appreciably from that of *tecta*, except that in all plates the dark spots are of greater extent.

The differences noted above are constant in specimens of the following dimensions: The largest has the shell 7¾ inch. long by 5⅞; the next 6 by 4⅝, and the smallest 3¾ by 3. Had I only had one specimen, I should have hesitated at making a distinction, but with three of such different ages, I am inclined to think there is more than a casual variety.

Among the Monitor Lizards, (*Varanidæ*) *Psammosaurus scincus*, Merr., not recorded by Günther among the Reptiles of India, is given by Theobald in his Cat. Rept. Museum Asiat. Soc., from the Punjab, Salt Range. I found it very common in the N. W. P. and the Punjab, in the latter country indeed more common than *Varanus dracæna*. I also found it common at Delhi, Umballa, Lahore and other parts of the Punjab. It has recently been described by Carlleyle in the Journal of the Society, Vol. XXXVIII, under the name of *Varanus ornatus*, where a good account of the fresh coloration is given. Some time before the notice, I presented a young specimen in spirits to the Museum from Umballa.*

I found *Varanus lunatus* also in several of the Museums up-country, to wit Delhi and Lahore; and Carlleyle met it also in the vicinity of Agra.

Of the *Lacertidæ* Günther records but three inhabiting our province, of two of which he had not seen specimens, and of the third only one specimen exists in the British Museum. This lizard, named by Günther *Acanthodactylus Cantoris*, I found extremely abundant in Hurriana, in the country about

* I find by a note in J. A. S.'s Vol. XXIV, p. 715 that Blyth was the first to recognise this African Reptile from Theobald's specimen, and he moreover states that he has seen other specimens from the other provinces.

Hissar, Sirsa, and extending, though more sparingly, to the foot of the Alpine Punjab.* I got it at Bheirber in the bed of the river there, and within a very few miles of the head quarters of another true Lizard, cogeneric with *Ophiops Jerdoni*, Blyth. Theobald, on examining the hitherto unique specimen of this curious reptile, found that the nostrils were not as in *Ophiops* between two nasals followed by 3 small post-nasals, but in one nasal followed by two post-nasals, and he accordingly placed it under the genus *Tropidosaura.* But this last group has distinct eyelids, being a sub-genus of *Lacerta*, whilst *Ophiops Jerdoni* and this new species want them entirely. As the presence or otherwise of eyelids is, I consider, a more important character than the position of the nasals, I shall (in conformity with a suggestion of Dr. Stoliczka, who has been good enough to examine these specimens and other doubtful species of mine) call them *Pseudophiops*, and the new species found by me in the Alpine Punjab I shall call *Pseudophiops Theobaldi.* It is very common on the ascent of the first range of hills beyond Bheirber, in rocks and bare ground; and I found one specimen on the banks of the river close to where I got *Acanthodactylus Cantoris*, both frequenting the boulders in the dry bed of the river. It closely resembles *P. Jerdoni*, but differs in its more elongate and depressed head; the posterior frontals are separated by a small intercalated linear scale; the 3rd chin-shield forms a suture with its fellow, whilst in *Jerdoni* it is separated by small scales; and there are several other points of difference which will be noted more particularly in the "Reptiles of India." The colour is brown above, with a narrow pale yellowish line on each side from the eyebrow, lost on the tail; and another wider from below the eye through the ear to the thigh; between these stripes is a series of irregular black spots, which are slightly continued both above the upper and below the lower line; lower parts pearly white; tail pale brown with a reddish tinge, most distinct in young specimens. Length of one 3 inches, the tail being $1\frac{3}{4}$.

Major Beddome has recently found *Ps. Jerdoni* on the banks of the Toombuddra, and another place in Southern India. My first type specimen, now in the Museum, was got by me at Mhow in Central

* The young are very beautifully striped longitudinally.

India. At Saugor, also in Central India, I got several small specimens of a Lizard of which I have a sketch with some details which, in spite of its geographical position, appears to resemble *Ps. Theobaldi* more closely than *Jerdoni;* but without specimens this fact cannot be satisfactorily settled. It is found on all the rocky hills about Saugor, but rather rare.

Major Beddome has also quite recently sent me one specimen of yet another species of this genus, obtained by him on the Bremnagherry hills, at an elevation of 5000 feet. It differs from both the previous species in having a pair of small anterior frontals, the other two having one large one; the head is still shorter than in *Jerdoni* and more triangular, the tail is distinctly more rounded at the base than in either of the other two species, in which it is somewhat depressed. The coloration is very similar to that of the two others. I shall call this species *Pseudophiops Beddomei.*

Cabrita Leschenaultii, D. and B., recorded by me in my Catalogue from the banks of the Cavery and neighbouring parts, has been recently procured in those localities by Major Beddome, and he has also obtained one specimen of a second *Cabrita* which he has named *C. Jerdoni.* It is from the same district as the other, but differs from the typical species in several important points, as noted in the description of the species in the Madras Medical Journal for 1870, No I, p. 34 &c.

I find that *Tachydromus sex-lineatus* extends into Assam and the Khasi hills, where by no means rare about Shillong. Günther has not seen it from a locality north of Rangoon.

Dr. Stoliczka informed me of a second species of *Tachydromus* which was sent by Mr. H. L. Haughton to the Museum from Goalpara in Assam. It differs from the last and indeed from all the species cited by Günther, except *T. japonicus*, in having 4 pairs of chin-shields instead of 3, but it has 6 dorsal series of scales, and 10 ventral series; all of them keeled. Its coloration is very similar to that of *T. sex-lineatus*, but the glistering pale green longitudinal stripe is broader, and the dark line below narrower. I shall with the concurrence of the Curator name this *Tachydromus Haughtonianus.* Length $8\frac{1}{8}$ inches, of which the tail measures $5\frac{3}{4}$.

Of the *Scincidæ* I have ascertained by numerous specimens from Darjeeling, the Sutlej valley and Kashmir, that Günther's

Eumeces Himalayanus is identical with Blyth's *Mocoa Sikimensis*, which has thus a wider distribution, for which Günther's name would have been more appropriate, than the local but prior name of Blyth.

Theobald has described (Cat. Rep. Asiat. Mus. p. 25) a curious Scink as *Pleistodon (Eumeces) scutatus*, the locality of which was unknown. I procured one specimen of this interesting form in the Alpine Punjab, on the route from Jhelum into Kashmir.

Major Beddome has sent me specimens of a form of *Euprepes* which comes under Günther's first section *Ateuchosaurus*, distinguished among other points by the two-keeled scales. He names this *Ateuchosaurus Travancoricus*, having first obtained it in the Travancore hills, but has since found it in Malabar, and S. Canara, though rare. I procured it many years ago in Malabar, and noticed it at page 479 of Vol. XXII of the Journal, without describing it, as the specimen was unfortunately lost, but I took a sketch of it which I still possess. It is a small species, (vide Mad. Med. Journ. 1870, No. 1, p. 33).

The same indefatigable naturalist has also recently procured *Euprepes trilineatus*, Gray, only hitherto obtained by myself from one locality, and a second very closely allied species which I have called *Euprepes Beddomei*. It differs from *trilineatus* in its shorter, much more elevated head, with correspondingly shorter muzzle, in the upper labial shields posterior to the eye being larger and higher, in the median occipital plate being pointed instead of truncated behind, in the larger number of body scales, the smaller size of the spines, bordering the anterior edge of the ear, and in having 5 instead of 3 pale bands which extend well on to the base of the tail.

The imperfect specimen of *Tiliqua trivittata*, Gray, of Central India, presented by myself, still exists in the Museum here, and is evidently a distinct species from *T. rufescens* (or *carinata*, Schneid.) of which it is classed as a variety by Günther, differing, as Theobald, remarked by its 5-keeled scales. Its head also is shorter and higher, and there are some other points of difference.

Neither Major Beddome nor myself have found an identified *Lygosoma Dussumierii* of D. and B., from the Malabar Coast, which

Günther erroneously identifies with *Eumeces indicus*, a large species which I obtained in warm valleys in Sikim.

Several scinks obtained by Dr. Stoliczka within our limits, and described by Steindachner, have to be added to our Reptile Fauna, viz. *Euprepes Petersii* from Chamba, *Mocoa Blythii* from the Wangur valley, and *Mocoa Stoliczkana* from Spiti, &c.

I found the beautiful *Pseudopus gracilis* very common at Shillong. The spots on the body described as black or dusky, are in the living animal a beautiful and shining turquoise blue, quite similar to those of the European species.

I have ascertained that the very curious *Sphenocephalus tridactylus* of Blyth, stated to be from Afghanistan, is very common in the desert and sandy parts of the Southern and Western Punjab, extending quite to the borders of Sindh, and probably throughout the latter country also. Indeed, I should doubt its occurrence at all in the elevated region of Afghanistan. It is known in those parts of the Punjab which it frequents as the *Rig Màhi* i. e. Sand-fish, the same name by which the *Scincus officinalis* is known by and sold in Indian bazars, both being esteemed aphrodisiac. Its habits when alive fully bear out Mr. Blyth's conjecture on this point; it dives into the sand with great ease and celerity.

Major Beddome lately detected a very curious lizard of this family *Sepsidæ* in the Museum at Madras, which he described as *Sphenocephalus? pentadactylus*. (Madr. Jour. Med. Sc. 1870, No. 1, p. 30). It is stated to be from the banks of a river in Malabar.

Among the Geckos, Major Beddome has discovered several new *Hemidactyli* and *Gymnodactyli*, besides my *G. Malabaricus* which he has quite recently sent me from the foot of one of the ghats leading from Lognaad into lower Malabar, where also I procured my specimens. *Hemidactylus aurantiacus*, and *H. reticulatus* are described (l. cit.) by Major Beddome from Shevaroys and Colegal respectively.

I have recently got *Hemidactylus triedrus* from Bandelkund sent me by Colonel Tiernan to whom I had written to endeavour to procure the specimens of an Agamoid lizard hereafter to be noticed.

The *Gymnodactyli* are named by Maj. Beddome respectively, *G. marmoratus*, *gracilis Wynaadensis* and *ornatus*, and I find from my

drawings that I had previously found *Wynaadensis* in the same district. Those small *Gymnodactyli* resemble each other very closely, and possibly one of them may on comparison be found identical with *G. Jerdoni*, described by Theobald in his catalogue. Major B. has ascertained that *G. indicus*, Gray, described from specimens sent home by myself has generally an unequal number of pores on one side than on the other side. A very curious new form has been described by Beddome, from the Tripatty hills in North Arcot, as *Calodactylus aureus.* * The Gecko has the ends of the toes dilated into large disks, (vide Madras Med. Journ. 1870, No. 1, p. 30, pl. II).

My *G. littoralis* has hitherto not occurred to Major Beddome, or any of his collectors, but, I have little doubt, will yet reward their labours. It is very distinct from any of the other small Geckos, having the basal plates of the toes much dilated,—especially the most anterior one which is double the size of the others and somewhat nail-shaped; beyond this the apical portion of the phalanges are composed of small narrow plates all terminating in nails. The sub-caudal scutæ are large.

I have recently obtained what appears to be a fine new species of *Pentadactylus* of Günther from the Khasi hills. This I shall call *P. Khasiensis.* It has numerous larger rounded tubercles mixed with the very small scales of the back. The nostrils are situated between the rostral, 1st labial and a supranasal, and are followed by several small scales. There are 10 upper labials, the last long and somewhat undulating on its upper edge, and 11 lower labials. The body above is covered with about three series of elongated spots, which become two at base of tail, and finally unite into one. It is a large species.

I possess one or two specimens of *Nycteridium Schneideri* from the Khasi hills; rare apparently so far north, though it is mentioned by Günther from Assam and Bengal. The only other novelty to mention in this family is a species of *Eublepharis* which appears distinct from both *Hardwikii* and *macularius*, a species not in Günther, but recorded in Theobald's Catalogue. Unfortunately it is only a young specimen and imperfect. I got it in Hurriana and shall provisionally call it *Eublepharis fasciatus* It has the larger tubercles of the back larger and finer than in *macularius*, and

less close and narrower than in *Hardwickii.* It is beautifully banded with white, having one nuchal band as in the last named species, but 3 dorsal ones, besides one on the root of the tail. Its head and body are 1¾ inches long, but the tail is imperfect.

Of the *Agamidæ* I have obtained two apparently new species of *Japalura*, one from Sikkim, the other from the Khasi hills, which I have named respectively *microlepis* and *planidorsata.* The former, of which I only obtained one specimen, differs conspicuously from *variegata*, which is also extremely common in Darjeeling, by the much smaller scales being more sparingly mixed with large ones. The back is reddish, abruptly separated from the greenish color of the sides by a series of somewhat raised scales; the dorsal crest is very low and continued to the base of the tail. The head and body is 2⅝ inches; the tail (imperfect) 2½.

The other new species is a very remarkable one, lately procured in the Khasi hills; the back is very flat, in which it resembles the last; it has no nuchal nor dorsal crest, but a double series of very slightly enlarged keeled scales separated by only one row of smaller scales, but on the neck by four or five; and there are several series of angularly bent larger scales, the angles directed backwards. The superciliary scales are strongly keeled, and there are several scales above the tympanum enlarged and prominent. It has a strong similarity in the arrangement of the scales to *Japalura Swinhonis* from China.

One specimen from head and body nearly 2, tail about 3¼ inches. I found two specimens only. They are of a dull yellowish colour, with dusky cross bands, and the sides mottled dusky.

P e t e r s* has two sub-genera, which with *Japalura* should perhaps form sub-divisions of *Otocryptis*, all agreeing in the concealed tympanum. He describes a *Ptycolæmus gularis* from Calcutta (bought).

The smaller race of *Sitana*, being the one procured at Pondicherry and the south of India, must retain Guerin's name of *Sitana ponticeriana;* and the Deccan species, being the larger of the two, cannot well stand as *S. minor*, and will require a new name, for which I propose *Deccanensis*, that part of India being its head quarters.

* Monat. Berl. Akad., 1864, p. 386.

I have also got one specimen of a new *Oreocalotes* from the valley of the Sutlej near Kotegurh, which I call *Oreocalotes major*. I have not seen a specimen nor a drawing of *Oreocalotes minor* to compare it with, but it differs from the description of that species by its smaller and much more numerous body scales, by the abdominal scales being conspicuously larger than those of the sides and in its mode of coloration. The general colour is purplish grey above, with some black cross bands on the head, which become arrow shaped on the trunk and the root of the tail; a blackish band runs from behind the eye along the side of the neck; the sides of the body are green, mixed with black, (the black scales being small and smooth, and the green ones large and keeled); limbs and tail with dusky cross bands and rings; the throat whitish, with a few black specks, and a very small light purple gular lap; belly tawny white with brown specks. Length 9¼ inches; the tail being rather more than 6.

Beddome has recently got specimens of *Calotes Elliotti*, the *C. Rouxi* of my catalogue from the western forests.

I have got five specimens of *Calotes Maria* from the Khasi hills, and of a second species which is apparently Blyth's *Calotes platyceps*. This differs conspicuously from *C. Maria* by the fewer scales of the body, the very much larger scales of the throat, the lower sincipital crests, the inferior of which is situate immediately above the orbit, and not at a distance as in *Maria*. Both are beautifully green with more or less various marks. *C. maria*, being much the largest species, some specimens measuring 18 inches, of which the tail is above 13. *C. platyceps* scarcely exceeds 12 or 13 inches, the tail being 9.

I much doubt the occurrence of *C. Maria* in the North Western Himalayas, whence recorded by Günther on the authority of one of the Schlagintweits; but, as I will have frequent occasions to note in my "Reptiles of India," several of the habitats of the Reptiles given by the brothers Schlagintweit appear to be erroneous, probably from displacements of labels.

Oriotiaris Elliotti, Günther, is clearly *Calotes tricarinatus*, Blyth, which that naturalist in a MS. copy of his paper "on some Reptiles" &c., forwarded to me, has marked *new genus*. It is rather uncommon about Darjeeling, and never grows to a large size. Günther strangely puts its with a query as *Calotes Maria*.

One of the type specimens of my *Calotes nemoricola* still exists, though much injured, in the Museum here, and it is very distinct from *C. gigas*, also from the same locality.

The only Agamoid lizard noted in my Catalogue is the one described by Blyth from specimens obtained by myself at Saugor in Central India as *Brachysaura ornata*. All my endeavours to procure specimens for a more minute examination of this very curious form have hitherto failed. From some remarks made to me by Colonel Tytler, I was led to believe that Bundelkund would prove to be the head quarters of this Agamoid, and this indeed is highly probable, but Colonel Tiernan to whom I applied has not yet succeeded in getting me specimens. Till some one with sufficient scientific proclivities examines those districts, we must rest satisfied with our incomplete information. From a rough sketch of the Lizard and some of its details, I can add to the notes furnished by Blyth, the following scraps of its structure.—Scales rather large, in distinct transverse bands, not directed so obliquely upwards as in *Calotes*, not quite so straight as in *Salea*, nostrils at some distance from the snout in a large scale ; a distant shoulder fold ; one large tuberculate scale in the middle of the head, surrounded by smaller 4—6 sided ones ; a ridge of strong scales protecting the eye. Length of one about 6 inches, the tail being not quite 3.

To the section of Rock lizards, I have to add a species of *Trapelus*, also from the Alpine Punjab, quite distinct from Günther's *Trapelus megalonyx*. The central shields of the head, 2 or 3 series, are large ; the upper lip is surrounded by 31-32, instead of 39 shields, there are no conspicuously large shields on back and sides ; the scales on the upper base of the tail conspicuously larger than those on the under side ; the foreleg does not reach the hip-joint ; the nails are sub-equal and all very much smaller than the thumb ; coloration yellowish brown, with a series of dark brown oblique bands interrupted on the median line and on the sides, below pale yellowish. Length of specimen 7 inches, the tail being 4½.

Agama agilis, Oliv., an African Lizard, was added to the peninsular Fauna by Theobald, who obtained it in the Panjab Salt Range. I have never observed it.

I am not quite satisfied of the distinctness of *Stellio indicus* and *Laudakia tuberculata*, or rather I am inclined to class them with Günther as one, but unfortunately I did not secure many specimens (for comparison) from different localities.

Steindachner's *Stellio himalayanus*, brought by Stoliczka from Ladak and Tibet, is quite distinct, but hardly enters our province.

From information, recently sent me by Major Beddome, the beautiful *Liolepis guttata* must be added to the Peninsular Fauna. I sent him a specimen procured by myself at Thayetmyo, and he in reply wrote back that he had recently got this Lizard from Canara, quite identical with my Burmese specimen. This is a highly interesting addition to our Peninsular Reptile Fauna.

In my Reptiles of Sth. India, under the head of *Acanthodactylus Nilgheriensis*, I state that I have reasons for believing that that Lizard, and the Chameleon named in my Catalogue as *C. pumilus* from the Nilgherries, on the authority of Walter Elliot, were most probably Cape species that had somehow got mixed with his Indian specimens.

Dr. Stoliczka has pointed out (Proceedings Asiat. Soc. for Jany. 1870, p. 2,) that the ridge on the upper part of the head of the Indian *Ch. vulgaris* are stronger than in the African form, and that there are no lateral longitudinal bands on the body. These and some other differences are, by no means, opposed to the once current opinion, that the Indian form is specifically distinct from the African, the former having been called *Ch. Ceylonicus*, Laur.

Among *Ophidian* Reptiles I have fewer novelties to point out than in the *Saurian* or *Batrachian* Reptiles.

A considerable number of new species of the curious earth Snakes, chiefly of the families of *Uropeltidæ*, have been added by Major Beddome. The remarkable *Xenopeltis unicolor* has been obtained in Southern India, as recorded by Theobald. Amidst the multitude of species of the families now known to science, I am not certain to which my three species of *Cylindrophis* can be referred, but with regard to my placing them in that genus, I have the authority of Dr. Cantor (to whom I referred several of my doubtful species), and whose remarks I now keep in possession.

Under the head of *Oligodon*, I have only to remark that I believe the figure of Russell 1, pl. 19, which has been called *Col. tæniolotus*, but generally referred to the young of *Tripidonotus stolatus*, refers to a species of *Oligodon*. The general aspect, short head, markings, short tail and few sub-caudal scuta are all marks of that group, and the presence of palatine teeth recorded by Russell is not a certain negative sign, for I see that several of this group have lately been shown to possess them. Whether this snake can be referred to one of the lately described species or not, it must (in case my observations are verified) stand as *Oligodon tæniolatum*.

I lately procured two species of *Cyclophis* in the Khasi hills. One of them appears to be *Cyclophis frænatus* of Günther, described from Afghanistan and Mesopotamia. The only difference I can detect in the description is, that in my specimen, the temporals are 2 + 2, the first temporal having apparently a small one cut out of its anterior edge. Length of my specimen 14½, the tail being 4⅛.

A specimen* in the Museum (No. 81½), marked *Dipsas monticola*, Cantor apud Blyth, appears to be the same species; a second small black mark begins behind and below the gape, continued as a line of specks on two or three lowest series of scales, and finally just forming a dark edging above and below the last row of long scales, and is lost on the posterior part of body; below pale yellow.

The other species is a much smaller snake, a female, only 7¾ inches long, having 5 large eggs in her ⅜ × $\frac{3}{16}$ of an inch. The tail was 1¼. The single large nasal is posteriorly obliquely slit up to the edge, one preocular and two postoculars; the supraciliaries small and occipitals large; 15 scales; ventral scuta 127 to 135, and 33 to 38 sub-caudals. The color is brown, with a pale lateral band from the eye extending to the tip of the tail; below this a mottled brown and yellowish band; chin, throat and anterior part of neck yellow, the rest of the lower parts red. Upper labials 6, normally, the last three sub-equal in size, and not as in *frænatus* where the 6th is as large as the 4th or 5th together; temporals 1 + 1. I propose for this one the name of *Cyclophis rubriventer*.

I obtained one small specimen of a snake in lower hills of the

* This is to all appearance the type of Blyth's *D. monticola*, Cant. [EDIT.]

North Western Himalayas, which from its long snout ought to be placed among the *Dryophidæ;* but the scales are not lengthened, it has the coloration of a young *Compsosoma*, and the tail is short, with few sub-caudals. The specimen unfortunately is not in very good order, and I do not like to name it at present. The head is somewhat depressed, with a long-pointed snout, very distinct from the neck; eye of moderate size; body not compressed; nostril much higher than broad, extending on the upper surface of the snout; anterior parietals only a little smaller than the posterior; nostril in one long nasal, faintly grooved; one loreal rather larger than high; two preoculars, the lower one touching 3 upper labials, and two postoculars, temporals 2 + 2 + 3, or the first upper one divided into two; 8 upper labials, 5th and the edge of the 6th enter orbit; 19 rows of smooth scales; 175 ventral scutæ and 44 pairs of sub-caudals. The second pair of chin shields is the largest and ridged externally. Length of specimen, 12¼ inches, the tail being 1⅝.

I obtained another very remarkable snake quite recently on the Khasi hills, which does not agree with any recorded genus (to description of which I have access), and the family to which it belongs is also doubtful. It has a blunt head, very distinct from the thin neck; long, rather compressed body, and long tail; its scales are very numerous, not imbricated (as in some of the *Homalopsidæ*), and the shields of the head are short, and do not cover the occiput, but the nostrils appear to be lateral.

I propose calling the genus after our accomplished and able Secretary in the Natural History Department, Dr. F. Stoliczka, and the species—

Stoliczkia Khasiensis.—It has two pairs of frontals, the first pair very small and from the state of the specimen rather difficult to notice; the second one very large. The rostrum is slightly injured, but the nostrils appear to be lateral, though placed rather in front, and apparently surrounded by a slightly swollen edge; the vertical is very short, broader than long; the supraorbitals rather small; one large preocular; 2 postoculars; no large temporals, small scales like those of the body immediately following the postocular; 8 upper labials, 5th and 6th entering the orbit, the last, very long;

3 pairs of small chin shields ; 27 to 31 rows of small lengthened ovate tuberculated or ridged scales, increasing in size towards the ventrals, those forming the last row on either side being largest; ventral scutæ 207, anal undivided; sub-caudals 114, single. Length of specimen, 26½ inches, the tail being 7¾. Colour a dusky plumbeous above, white below.

Some of the characters of this remarkable species approximate it to the *Dendrophidæ :* its somewhat depressed head, long thin neck, compressed body, and long tail, scales increasing in size towards the ventrals &c. ; in the character of the shields of the head, and of the scales of the body, it resembles certain *Homalopsidæ*, and its short blunt head has an appearance of some of the *Amblycephalidæ*, and it has the single sub-caudals of *Cercaspis* and *Amblycephalus*. I shall not attempt now to refer it to any family, but leave that for the future.

I obtained a single example of the very rare *Xenurelaps bunguroides*, *Elaps bunguroides* of Cantor, of which only one specimen is known, the type example in the Museum at Oxford. My specimen is a rather smaller one, being 15 inches, of which the tail is 2⅛. It has 224 ventral scutæ and 44 sub-caudals, and 13 to 15 rows of scales on the body. It only differs from G ü n t h e r ' s description by having one white intercepted line commencing on the vertical, and extending to the throat on each side. When alive, the color of the body was a deep rich madder-brown, and the bands were yellow, paling posteriorly. The chin and throat are whitish, which passes into red, gradually deepening on the posterior part of the body and tail, and there are numerous oblong black marks on the abdominal and sub-caudal centres.

The number of anurous Batrachians noted by me in my paper formerly alluded to, from Southern India, was 28. Of these, two are doubtful, as distinct from allied species, *viz.*, *Rana nilagirica* from *R. gracilis*, my *R. agricola*, and *Pyxicephalus fodiens* from *P. brevis*, my *P. pluvialis*. Of the other supposed new species named there, three have been described by G ü n t h e r under different names, and Major B e d d o m e and myself have obtained these, and all the other supposed new species, with two exceptions, which I doubt not will yet

be procured by Major Beddome. This gentleman has also found at least six new species not observed by myself.

I have also obtained at Darjeeling and the Khasi hills at least 6 new species. I can only enumerate these here, but will endeavour to give recognizable characters in another paper.

Rana crassa of my Catalogue has been noticed by Theobald, and is distinct from *Rana Kuhlii* of Ceylon which it much resembles.

I have obtained one fine new *Rana* at Darjeeling, somewhat allied to *R. Liebigii*, but distinguished from it by its more fully webbed feet. I call this *Rana Sikimensis.*

Beddome has got one new very handsomely marked true frog from Southern India, which he names *Rana vittata.* He has also procured my *Rana flavescens* and *R. curtipes*, both which are *Hylorana*, and quite recently *Hylorana Malabarica*, sufficiently distinct from Günther's *H. temporalis* of Ceylon, as indeed that naturalist suspected, though he had not seen *Malabarica.* My *Hylorana curtipes* is a most distinct form from *Malabarica*, and Günther must have had a very hazy idea of *Malabarica*, when he asserted, on seeing a copy of my drawing of *H. curtipes*, that it was most probably *H. Malabarica*, he himself acknowledging that he had never seen that species.

Beddome has sent another small species of *Hylorana* which he calls *H. bipunctata.*

A species of *Hylorana* common at Shillong, which, from its coloration, I considered at the time to be *erythræa*, I find on examination and comparison of specimens to be quite new, and shall from its most curious bird-like voice call it *Hylorana pipiens.* It has much larger legs than any of the other Indian *Hylorana*, and is of a much more slender habit altogether, with longer and sharper muzzle and more slender limbs.

My *Polypedates variabilis* is the same as *P. pleurostictus*, Günther, as he himself suspected. Beddome has obtained one small new species of this genus, and I have got three new ones, one very remarkable one from Sikkim, and two beautiful species from the Khasi hills. A very large green backed one is perhaps the one just mentioned by Blyth in a note as *Polyp. smaragdinus* from the Naga hills, which name I shall retain for it. The other Khasi

one is a complete link to *Rhacophorus*, having the basal portion of the fingers webbed. It is a very beautiful species which I shall call *P. annectans*.

P. smaragdinus grows to a large size, about equalling *Pol. marmoratus*, Blyth, (*Afghana*, Günther). It resembles *P. maculatus* something in habit, but is not so slender: the upper surface of the head and hind neck is slightly rough with minute tubercles, whilst the lower surface of body is perfectly smooth. The body is not nearly so long as the hind leg to the heel, whilst in *maculatus* it is as long or slightly longer. Colour, a beautiful green above, below yellow. The sides of body and thighs variegated and banded with reddish brown and black. The disks of the fingers and toes are not very large. Length of one, head and body 3½ inches, hind leg 6¼.

I obtained *Rhacophorus gigas* in Sikim and the Khasi hills, where I also obtained what appears to be the true *Rhacophoras Reinwardtii*. This is a much smaller species than *gigas*, and all my Khasi specimens have one or two deep blue spots on the sides of the body, but the dark mark on the webs of the toes is less marked, than in the figures of this species in Schlegel.

I recorded *Rhacophorus Reinwardtii* apud Dum. and Bibron, from Malabar in my Catalogue, whence it was also procured by the French collectors, but Günther has entirely ignored this genus as from Southern India. Major Beddome has sent me a specimen, on comparing which with Khasi specimens a perceptible difference is apparent. The head and body of the Malabar are indistinctly though finely tuberculated; the habit is more slender, and there is a distinct fold of skin over the eye in *Reinwardtii*, absent in this. The head too is perhaps a trifle longer. I shall provisionally call it *Rhacophorus malabaricus*. It has the spots on the sides of the body, so conspicuous in Khasi specimens of *Reinwardtii*.

I have also got a new *Pyxicephalus* from the Khasi hills, and Beddome has sent me apparently my *P. rufescens* from the Wynaad. He also sent me small specimens of *P. brevieeps*, which from their appearance during life, he, like myself, considered to form two distinct species, and which Theobald also considers to be distinct.

I obtained numerous specimens of *Xenophrys monticola*, Günther, both at Darjeeling and the Khasi hills. It has distinct vomerine teeth which Günther was unable to detect in the specimens of the British Museum. I also obtained five specimens of a large species of *Xenophrys* both in Sikim and the Khasi hills, which I propose describing as *Xenophrys gigas*.

Besides *Ixalus tinniens*, *Ixalus femoralis* (*glandulosa* of my Catalogue), *I. Wynaadensis*, and *I. opisthorhodus* (my *Limnodytes phyllophila*), all of which Beddome has obtained, he has got at least three new species of this genus in Southern India; and I have got another in the Khasis.

Beddome has likewise obtained *Caloula montana* of my Catalogue, which appears perhaps to be *C. obscura* of Günther, and another species which I have not yet seen, but which, from his description, appears to be *C. guttulata* of Pegu, lately figured by Günther. He has also procured a small form allied to *Caloula*, which appears to be identical in generic form with one obtained by Dr. Stoliczka in Penang, for which he proposes the name of *Ansonia*, and which he will himself describe shortly.

I have procured *Diplopelma rubrum* from Nellore where I first obtained it, and it appears to be one of the varieties of *Diplopelma ornatum* apud Günther, as I see that many specimens were presented by myself, but I consider it perfectly distinct from *D. ornatum* of Dumeril and Bibron, with which my *D. malabaricum* is perhaps identical. I have also received from Major Beddome a specimen of *D. carnaticum* of my Catalogue, which again is quite distinct from *D. rubrum*, and appears to be generally spread. I have specimens from Assam and Central India.

II. Observations on some species of Indian birds, lately published in the Society's Journal,—by Allan O. Hume, C. B. (Abstract).

This paper contains much additional information regarding some species of birds which have been noticed in Vol. xxxviii, Pt. 2, of our Journal by Mr. W. T. Blanford. Mr. Hume has been for many years paying special attention to Indian Ornithology, and with the help of many friends has brought together one of the

finest collections of Indian birds. At the same time, he has collected a very large amount of new information regarding many birds which previously were hardly or only little known, and such additional observations on some species, formerly recorded by Mr. W. T. Blanford, he offers in the present paper which will be, it is hoped, soon published in the Society's Journal.

III.—NOTE ON A FEW SPECIES OF ANDAMANESE LANDSHELLS, LATELY DESCRIBED IN AMERICAN JOURNAL OF CONCHOLOGY,—by Dr. F. Stoliczka.

The last number of the above Journal, Part 2, vol. v., (p. 109, pl. 10) brought us a welcome addition to Indian Conchology in the way of illustrations of well known species, described under new names. The paper to which I allude is entitled "*Descriptions of new species of terrestrial Mollusca from the Andaman islands, Indian Archipelago*, by Geo. W. Tryon, Jr."

It is not my object to point out the very vague knowledge the author of the above paper appears to possess of the history and geography of our Andaman settlement. It would perhaps be unfair to expect from the author, that he should know that this settlement has now a population of about 8000 or more foreign inhabitants (European and native), and that it has been the largest Indian convict settlement for upwards of 12 years. It is also probably not to be expected that the author should be acquainted with the numerous publications in our Journal regarding the fauna of those islands by Mr. E. Blyth, by Col. Tytler and Lieut. Beavan in the "Ibis," with various papers on the physical geography and the population of those islands, (also in our Journal), with Dr. Mouat's "Adventures and researches among the Andaman islanders, London, 1863," together with an appendix on the fauna by Mr. Blyth, and perhaps not even with the couple of scanty notices in our Journal by Mr. Theobald regarding the shells of those islands,—but how Mr. Tryon could have overlooked a well known species described by Chemnitz about 90 years ago, and figured in Reeve's Monograph, and moreover the numerous papers of Mr. Benson about Andamanese landshells in the Annals and Mag. Nat. Hist., between the years

1859 and 1864, it seems almost incredible to an Indian naturalist to believe! The words, "as I cannot discover any species* attributed to these islands in the various monographs" appear the more remarkable, as Mr. Tryon is believed to have for years paid special attention to the reviews of Conchological literature, and as Editor and Recorder of the American Journal at one time, when speaking with apparent very weighty authority on the Indian *Unios*, evinced a great interest in the general welfare of Indian Conchology! (vide Am. Journ. Conch. 1867, vol. iii, p. 201).

There are about 20 species of landshells enumerated by Mr. Benson and Theobald in their publications, and my late investigations will probably increase the number to 30. Some species are identical with those of the Nicobars.

In order to prevent any misinterpretations of Mr. Tryon's well executed (and very welcome) figures, I give now a list of the identifications; but I will not further refer to the subgeneric distinctions of the species, as I hope shortly to be able to publish some notes regarding the anatomy of the animals, and other peculiarities of the shells of the various species.

1. *Rhysota (Helix) Chambertinii*, Tryon, l. cit. p. 109, pl. 10, fig. 2, is *Helix Haughtoni*, Benson, Ann. Mag. Nat. Hist., 1863, 3 ser., vol. ix, p. 87.

2. *Ampelita (Helix) Bigsbyi*, Tryon, l. cit. p. 110, pl. 10, fig. 3, is *Helix trochalia*, Benson, A. M. N. H. 1861, 3 ser., vol. vii, p. 82.

3. *Orobia (Helix) Andamanensis*, Tryon, l. cit. p. 110, pl. 10, fig. 4, is *Helix exul*, Theobald, Jour. As. Soc. Bengal, 1864, xxxiii, p. 245, which is possibly the same as *Hel. stephus*, Benson, Ann. M. N. H., 1861, 3 ser., vol. vii, p. 84.

4. *Opeas (Bulimus) Pealei*, Tryon, l. cit. p. 110, pl. 10, fig. 5, is *Spiraxis Haughtoni*, Benson, A. M. N. H., 1863, 3 ser., vol. xi, p. 90.

5. ? *Cyclostoma Leai*, Tryon, l. cit. p. 111, pl. 10, fig. 6, is the old *Cyclophorus foliaceus*, Chemnitz, sp. Tryon's figure

* *Helix Helferi*, *Strep. Andamanica* and *Hel. Andamanica* excepted. No doubt, Mr. Tryon has perhaps since found out more in Pfeiffer, "Mon. Hell." vols. v and vi.

could be almost taken for that in Reeve's Icon. vol. xiii, Monog. *Cyclophorus*, pl. xiii, where an account of the history of the species is given, according to Benson. Chemnitz very probably received a specimen of this species from the Nicobars, together with *Cyclophorus turbo*, Chem., through the Moravian Missionaries; for I also obtained two specimens of *foliaceus* from the neighbourhood of the Nancowry harbour on Camorta, though this species is here, as compared with the peculiar Nicobar one, very rare.

Mr. Tryon further mentions from the Andamans *Plectopylis achatina*, Gray. I never received a specimen from there, but found the species most abundant near Moulmein on the lime-stone hills, and *only* on these. I don't know whether there are any limestone rocks on the Andamans. A species allied to *Helix procumbens* and *gabata* of Gould occurs at the Andamans, and very young shells are not much unlike those of *Pl. achatina.*

The same author further mentions *Helicina Nicobarica*, Phil.; this is probably *Hel. scrupulum*, Benson, A. M. N. H., 1863, 3 ser., vol. xii, if at all distinct from the last.

IV.—Notes on the genus *Hara*, by Surgeon F. Day. (Abstract).

The author describes a new species, *H. Jerdoni*, of this remarkable genus of siluroid fishes, and offers general remarks regarding the only other two Indian species which he admits, *H. Buchanani*, and *H. conta*.

This paper will appear in the first number of the Journal for this year, to be published shortly.

V.—Note on North Westers,—by the Hon'ble J. B. Phear.

In this note I merely offer an hypothesis to explain the remarkable "Nor-Wester" storms, which invariably precede the setting in of our rainy season. We are all familiar enough with the phenomena, the typical form of which may be described pretty nearly as follows :—The monsoon breeze is blowing steadily from the Bay of Bengal, (say S. E., S. or S. W.). A heavy mass of clouds appears in the N. W.; it rises in the sky very rapidly, preserving an even front, which stretches in a long sharply defined line from S. W. to N. E. Rain is seen to be falling towards the N. W.;

this approaches with the cloud and is accompanied by much thunder and lightning. The southerly breeze still, however, continues until the line of cloud-front has reached, or even passed, the zenith, when, for a few seconds, there occurs a complete calm, followed by a sudden and mighty rush of wind from the N. W.— the rain arrives,— there is a heavy downfall— the storm passes by— and for a time there is almost a complete absence of wind with a lowered temperature.

My explanation is this:—The air coming from oceanwards is largely charged with vapour at a comparatively high temperature, and I suppose that a much colder current of air is suddenly (so to speak) poured out upon it from the N. W. and passes over with considerable velocity. Rapid condensation takes place along the surface of contact of the upper and lower strata of air— dense cloud is formed; there is electrical disturbance; and this state of things advances with the front of the advancing N. W. current. As the result of the condensation, a large mass of water is precipitated to the surface of the earth. This, in falling, displaces air, the water as it nears the ground driving the air out of site with increasing force. By the continuation of the process, as the front of the upper stream of cold air passes on, an uninterrupted sheet of falling water is produced, which *apparently* advances with the cloud above and wind below. Actually, however, the path of each drop (excepting those of the forefront) may, I imagine, possibly be pretty nearly vertical: before condensation, the vapour, if not brought to rest by the friction of the two currents, was moving with the lower current of air towards the N. or N. W.; it does not acquire any new horizontal velocity merely by becoming condensed, and as the drop falls (if the height be great) it will manifest, if anything, relative to the earth a slight increment of velocity towards the west. So far, then, there is certainly no reason why the drops should move in the direction of the storm; on the contrary, they ought to have a velocity towards the N. and W. But the formation and falling of the water effects a transfer of matter from above to below; a partial vacancy, or rarefaction, thus takes place beginning at the point of condensation, and the relatively dense cold air of the upper current is at once ready to press into the opening: it, pursues the

falling water downwards and becomes thus mixed with the lower current. At this stage we have the lower current, which is, to use a convenient word, possessed of a velocity towards the north and west, infiltrated by the upper cold current which is possessed of a velocity towards the S. E. The resultant condition of the mixture may be any modification of the storm velocity, even to quiescence. Obviously, however, the air which comes down from above, must always lose a very large proportion of its velocity, for it cannot continue its forward course, without carrying with it the whole of the air which remained undisplaced by the rain between the cloud and the earth, and which had an initial velocity in the opposite direction.

My explanation shortly amounts to this, that the large body of water generated and falling as the upper current passes on, produces the "Nor-Wester" by driving violently forward the air which is displaced by it in its passage to the earth, while the air which is not so displaced, is either brought to rest, or acquires a comparatively small forward velocity (towards the S. E.) from the upper current of air permeating it. If this explanation be correct, and the facts occur as I have supposed them, they afford a remarkable instance of transfer of motion. It would also follow from these facts that the atmospheric pressure would increase during the passage of the storm; for, in the first place, the advent of the upper current of cold, and therefore relatively dense air, would, to some extent, effect an addition of mass to the local atmosphere; and secondly, the two opposing currents checking each other's course, would bring about a condensation of the air, which is the product of their union. And it is some confirmation of my theory that, in truth, a rise of the barometer does, I believe, uniformly occur during a "Nor-Wester."

Also on the flanks of the storm there ought to be according to the foregoing theory a strong wind, coming *from* the place of the falling water. This would manifestly last as long as the storm remained within a certain limited range, and would change its direction as the storm passed by. As far as my observation has extended, the phenomena which actually occur bear this out.

VI. ON CERTAIN PROTRACTED IRREGULARITIES OF ATMOSPHERIC PRESSURE IN BENGAL, IN RELATION TO THE MONSOON RAINFALL OF 1868-69,—by Henry F. Blanford, Esq. Meteorological Reporter to the Government of Bengal. (Abstract).

Mr. Blanford said that the object of his paper was to bring to notice certain irregularities in the distribution of barometric pressure during the monsoons of 1868 and 1869, which had much influenced the course of the wind currents during those two seasons, and had evidently contributed largely to produce the anomalous rainfall of Bengal and the N. W. Provinces, the important consequences of which must be fresh in the recollection of all.

Having spoken of them as irregularities, he would, before proceeding to describe them, briefly notice what appear to be the normal features of barometric pressure in the S. W. monsoon in India. On this subject, unfortunately but little direct evidence is forthcoming, since no records, or none admitting of comparison with those of the Bengal stations, are to be had for the greater part of India. Indirect evidence, however, is available; and this indicates as probable that at the beginning of the S. West monsoon a focus of minimum pressure exists over the central region of the peninsula, and that towards the middle or end of the monsoon, as Col. Strachey has suggested, this focus is probably transferred to the Punjab. That such is the case may be inferred from the direction of the winds, which on the Bombay side are westerly during the hot weather and early months of the S. W. monsoon, while in Bengal the prevailing direction is from the South East. It is to be inferred that they blow, in accordance with Buys Ballot's law, towards a place of minimum pressure, with a tendency to circulate round it; the law of their movement being the same as that of the winds in a cyclone. A similar inference is to be drawn from the fact displayed in Dove's Isothermal charts, as well as in that of Messrs. Schlagintweit, *viz.* that in the hot weather, the focus of highest mean temperature is about Nagpore,—in the rains, in the Punjab: and a persistently high temperature necessarily produces a low barometric pressure by the expansion and consequent overflow of the air above the heated region. Again,—the course of the isobaric lines

across the Bay of Bengal (as inferred from the stations around the coast) is from North East to South West, or in general conformity to the outline of the peninsula, with the lower pressure (in the S. W. monsoon) lying to the North West. If the normal pressure then be such as is inferred, the normal winds in Bengal would be from S. E., (in accordance with the law already alluded to); but if an independent focus of low pressure be interposed in their course somewhere in Lower Bengal, it would follow that the vapour-bearing winds would be drawn in towards it, and would there discharge their moisture as rain, while dry westerly winds would prevail in the N. W. Provinces. This is what actually happened in both 1868 and 1869.

The re-distribution of pressure of the change of the monsoons occurs in the months of March and October. In 1868, as early as the month of April, a slight barometric depression (relatively to places around) appeared in the N. W. corner of the Bay of Bengal, the barometer at False Point being lower than that at Cuttack, and that at Saugor Island lower than at Calcutta. This difference was more marked in May, and still more so in June, at the beginning of which month the rains set in very heavily in and around Calcutta. The heaviest fall was over Balasore and Coutai, where it exceeded 30 inches. It was very heavy at Calcutta and Midnapore (between 20 and 30 inches), and diminished rapidly in all directions around. The wind resultants for the month shew the influence of the depression very markedly, those of all stations' being more westerly than is usually the case. In July the rains were not heavy, and an area of low pressure in the direction of Hazareebagh appears to have exercised an influence over the winds, rendering them more easterly. But in August the former focus was again intensified, the minimum pressure being very near Saugor Island, and the winds were again drawn towards it. The rainfall of this month was very heavy (exceeding 30 inches) over Hooghly and Kishnagur, therefore at a distance of about 100 miles to the north of the place of barometric depression. It exceeded 20 inches at Calcutta, Burdwan and Jessore, diminishing in all directions around. In September, the depression remained, but was less marked and influential, and it did not disappear entirely till December. Throughout the season, the winds in the country to westward of the Delta never

become S. E. During the greater part of it they were westerly, and in September they veered to north east. Hence apparently the dryness of the N. W. P. throughout the season.

In 1869, shortly after the redistribution of pressure in March, a slight depression appeared over a region including Berhampore, Monghyr, Patna and Hazareebagh. In May it was intensified, especially over the first named station, and reached its lowest point in June. There was then a mean difference of 0.14 of an inch between Calcutta and Berhampore. The effect of this depression on the winds and rainfall was similar to that of the Saugor Island depression of the previous year. At Patna, the wind was north, and at Hazareebagh and Cuttack south and somewhat westerly. The rainfall in this month, as in the previous year, was heaviest, not over the place of depression, but at some distance (150 miles) to north of it; especially over Buxa (Bhotan Doars), Dinajpore and Rungpore. Generally it exceeded 20 inches over the country north of the Pudda river. In the Delta it was below 20 inches.

In July, August and September, the depression did not disappear, but appears to have moved westward. So that, at the end of the rains, Monghyr, Patna and Hazareebagh were all lower than Berhampore.

In conclusion, Mr. B l a n f o r d commented on the peculiar relation that appeared to exist between the place of greatest barometric depression, and that of greatest rainfall, the latter appearing always to be to north of the former in the instances cited; and he suggested as a possible explanation, the existence of two barometric depressions, so related that one would act by retarding, without arresting, the wind currents in their progress towards the other. In such a case, it appeared possible that an accumulation of air would be produced not over but somewhat beyond the site of the first depression, and that the heaping up of a nearly saturated atmosphere, aided by diffusion of the vapour, would determine an excessive rainfall in that place.

He also pointed out the apparent influence of the Berhampore and Monghyr depression, on the course of the Cyclones which passed over Bengal in 1869. The first, in May, passed over Jessore; the second, in June, when the Berhampore depression was most intense,

passed directly towards that station across the delta, and speedily broke up on the north of the Ganges.

The third, in the beginning of October, when the lowest pressure was distributed over Monghyr, Patna and Hazareebagh, took an unusual course to the north west and between these stations.

The President said that in inviting discussion upon the paper which had just been read, he need not dwell upon the great value of Mr. Blanford's investigations. It had long been understood that the dominant cause of monsoon winds was the periodic occurrence of a terrestrial locus of minimum barometric pressure. And a persistent condition of low barometric pressure simply meant, that for some reason or another the spot in the earth's surface where it occurred, was a focus of maximum heat. He believed that Schlagintweit's map of isothermal lines exhibited a centre of maximum heat in the Punjab, during the rainy season, and no doubt the S. W. monsoon of our Presidency was greatly influenced by such a centre. Mr. Blanford's observations led to the remarkable conclusion, that in some seasons, if not always, there were other minor centres, or at least one centre in Bengal itself, which materially interfered with and disturbed the action of the principal centre. It was curious that an area of maximum rainfall should be found at a certain distance on the north side of this minor centre, and Mr. Blanford had offered a very ingenious theory to account for the fact. He (the President) however, felt some difficulty in accepting this theory. It appeared to him inconsistent with the maintenance of the barometric depression, which could only be attributable to the continuance of local surface heat in excess of that in the neighbourhood. The effect of the greater local heat was, by a process of internal expansion to lift the superincumbent column of air relatively to the surrounding air, by reason of which the upper portions of it became, as it were, poured aways sideways, and so the amount of atmospheric material in the vertical column was lessened; and as long as the relatively low barometer obtained, this operation must be going on. Therefore, the passing monsoon current must be affected by it, and if so, the motion of the particles of vapour in it could not safely be calculated as if they were sliding under the action of gravity upon the gradient lines of equal pressure. He would

himself be disposed to suggest that the expanding process, to which he referred, directly produced the result which Mr. Blanford mentioned; clearly, most of the discarded air and vapour would be thrown off on the side towards which the wind is blowing, *i. e.*, in the case of the S. W. monsoon in Bengal, towards the *North*, and thus there would be accumulation of vapour on that side; also the additional heat of the area of minimum barometric pressure would diminish the saturation of the incumbent air and consequently the rainfall; so that the comparison between the rainfall on that area, and on an area north of it, would in this way be doubly affected.

Mr. H. F. Blanford made some further remarks regarding the explanation which he gave of the scarcity of rainfall in the north west Provinces during the last year, and also regarding the suggestions made by the President.

Col. the Hon'ble R. Strachey observed that the greatest obstacle which is in the way of a satisfactory explanation of the various air currents lies in the high range of mountains which bounds India towards North. He thought that we are as yet far from being sufficiently acquainted with the varied influences which the Himalayan range undoubtedly has upon those atmospheric changes in India, and until our knowledge of this range has been much more improved, it seemed to him almost impossible that we could arrive at anything like a satisfactory explanation of the causes of those atmospheric disturbances. With regard to the rainfall, this difficulty is by far not so great, and an almost quite satisfactory explanation of it can be given. Col. Strachey then explained in detail the rainfall and its causes throughout India. He pointed out the remarkable diminution of the rainfall in the whole tract of country along the bases of the Himálayas from Bengal towards Peshawur, then towards Mooltan, and alluded to the local variations along the Western ghats.

After some further remarks on the same subject by Mr. H. F. Blanford, the meeting broke up.

LIBRARY.

The following additions have been made to the Library since the last meeting in February.

Presentations.

*** Names of Donors in Capitals.

Forhandlinger ved de Skandinaviske Naturforskeres, Tiende Möde, i Christiania fraden 4de. til den 10de. Juli, 1868 :—DET. KONGELIGE NORSKE UNIVERSITET I CHRISTIANIA.

Forhandlinger i Videnskabs-Selskabet i Christiania, Aar 1868 :— THE SAME.

Nyt Magazin for Naturvidenskaberne : udgives af den physiographiske Forening i Christiania ved M. Sars, og Th. Kjerulf, sextende Binds, Med 1-2 :—THE SAME.

Norges Officielle Statistik, udgiven i Aaret 1866, Beretning om Almueskolevæsenets Tilstand i Kongeriget Norges Landdistrikt for Aarene 1861-1863, udgiven af Departementet for Kirke og undervisningsvæsenet :—THE SAME.

Norges Officielle Statistik, udgiven i Aaret 1867, Tabeller vedkommende Skiftevæsenet i Norge i Aaret 1865, samt den Kongelige Norske Regjerings underdanigste indstilling af 16de Juli, 1867 :—THE SAME.

Norges Officielle Statistik, udgiven i Aaret 1865, Beretning om Skolevæsenets Tilstand i Kongeriget Norges Landdistrikt for Aarene 1864-1866, og i Rigets Kjobstæder og Ladesteder for Aaret 1867, udgiven af Departementet for Kirke og undervisningsvæsenet :—THE SAME.

Norges Officielle Statistik, udgiven i Aaret 1868. Fattig-Statistik for 1866, tillige med oversigt for Aarene fra 1851 af, udgivne af Departementet for Kirke og undervisningsvæsenet : — THE SAME.

Tabeller vedkommende Norges Handel og Skibsfart i Aaret 1867, udgivne Departementet for det Indre :—THE SAME.

Beretning om Rigets Œconomiske Tilstand i Aarene 1861-1865, forste Hefte indeholdende de af Rigets Amtmænd Afgivne specielle Beretninger, udgivne af Departementet for det Indre :—THE SAME.

Resultaterne af Folketællingen i Norge i Januar 1866, forste Hefte, indeholdende Tabeller over Folkemængde med mere i Rigets Forskjellige jurisdiktioner samt Folkemængde fordelt efter alder,

Kjon og Ægteskabelig stilling den 31te December 1865, udgiven af Departementet for det Indre :—The same.

Driftsberetning for Throndhjemstoren Jernbane i Aaret 1867, af given til Departementet for det Indre af Directionen for Throndhjem-storen Jernbane :—The same.

Norges Officielle Statistik, udgiven i Aaret 1869, Criminalstatistiske Tabeller for Kongeriget Norge for Aaret 1865, samt den Kongelige Norske Regjerings underdanigste indstilling af 6 marts 1869 :—The same.

Tabeller vedkommende Skiftevæsenet i Norge i Aaret 1867, tilligemed oversigt over de efter overformynder-Regnskaberne for Aaret 1867 under Rigets overformynderiers bestyrelse Henstaaende Midler samt den Kongelige Norske Regjerings underdanigste indstilling af 24 August, 1869 :—The same.

Norges Officielle Statistik, udgiven i Aaret 1869, Resultaterne af Folketællingen i Norge i Januar 1866. Andet og sidste Hefte, indeholdende indledningen til samtlige Tabeller vedkommende Folketællingen samt Tabeller over Folkemængden fordelt efter stand og næringsvei, efter Nationalitet, efter Fodested og Trosbekjendelse samt opgaver over antallet af sindssvage, Dovstumme og Blinde end 31te December 1865, udgivet af Departementet for det Indre :—The same.

Tabeller vedkommende Folkemængdens Bevægelse i Aarene 1856-65, udgivne af Departementet for det Indre.—The same.

Driftsberetning for Norsk Hoved-Jernbane i Aaret 1868, af given til Departementet for det Indre, af Directionen for den Norske Hovedjernbane.—The same.

Budget for Marine-Afdelingen under Marine og Post Departementet i Budgetterminen fra 1ste April 1869.—The same.

Norsk Meteorologisk Aarbog for 1868, Udgivet af det Norske Meteorologiske Institut 2den Aargang.—The same.

Le Glacier de Boium en Juillet 1868, par S. A. Sexe :—The same.

Thomas Saga Erkibyskups, Fortælling om Thomas Beckot Erkebiskop af Canterbury to bearbeidelser samt fragmenter af en Tredie efter gamle haandskrifter, udgiven af C. R Uuger :—The same.

Skatistisk Arbog for Kongeriget Norge (Anunaire de la Statistiquè du Royaume de Norvège) af Dr. O. J. Broch 1867-1868-1869, Heft.—The same.

En fremstilling af dot Norske—aristokratis—historie indtil kong Sverrestid af Ebbe Hertzberg :—THE SAME.

La Norvège Littéraire par P. Botten-Hansen :—THE SAME.

Den Norske Lods udgiven af den Geografiske opmaaling, 3die 4de Hefte :—THE SAME.

Ungedruckte, unbeachtete und wenig beachtete Quellen zur Geschichte des Taufsymbols und der Glaubensregel, herausgegeben und in Abhandlungen erläutert von Dr. C. P. Caspari, II. :—THE SAME.

Det Kongelige Norske Frederiks Universitets, Aarsberetning for Aaret 1868, med Bilage :—THE SAME.

The United States Sanitary Commission, a sketch of its purposes and its works :—THE GOVT., U. S. A.

The Sanitary Commission of the U. S. Army, a succinct narrative of its works and purposes :—THE SAME.

A record of the Motropolitan Fair in aid of the United S. Sanitary Commission held at New York in April, 1864 :—THE SAME.

History of the United States Sanitary Commission by C. J. Stille :—THE SAME.

Brooklyn and Long Island Sanitary Fair 1864 :—THE SAME.

Memorial of the Great Central Fair for the United States Sanitary Commission by C. J. Stille :—THE SAME.

Military Medical and Surgical Essays, 1862-1864 :—THE SAME.

Annual Report of the Board of Regents of the Smithsonian Institution for 1867 :—THE SMITHSONIAN INSTITUTION.

Annual Report of the Trustees of the Museum of Comparative Zoology 1866 and 1868 :—THE MUSEUM OF COMPARATIVE ZOOLOGY.

Entomological Correspondence of T. W. Harris, M. D., edited by S. H. Scudder :—THE BOSTON NATURAL HISTORY SOCIETY.

Proceedings of the Boston Natural History Society for 1868 :—THE SAME.

Memoirs of the Boston Natural History Society Vol. I, Pt. IV :—THE SAME.

Letters of the National Academy of Sciences, Philadelphia, 1866 : THE NATIONAL ACADEMY OF SCIENCES AMERICA.

Report of the Committee of the Bengal Chamber of Commerce, 1869 :—THE BENGAL CHAMBER OF COMMERCE.

Bulletin de la Societé de Géographie, Dècembre, 1869 :—THE GEOGRAPHICAL SOCIETY OF PARIS.

Report of the Total Eclipse of the Sun, August, 1868 :—THE ROYAL ASTRONOMICAL SOCIETY.

Contributions to the fauna of the Gulf Stream at Great Depths by L. F. de Pourtales ;—THE AUTHOR.

Kavitálahari by Rámadása Sena :—THE AUTHOR.

Dharma Samanvaya, Part I, by Jayagopála Vasu :—THE EDITOR.

The Calcutta Journal of Medicine Nos. 9 and 10 :—THE EDITOR.

Compendium Stenographiæ Latinæ secundum systema Gabelsbergeri, auctore Dr. J. Pláseller, autographo Prof P. Huberto Riedl, :—THE EDITOR.

Professional Papers on Indian Engineering, No. 26 :—THE EDITOR.

Rahasya Sandarbha No. 56 :—THE EDITOR.

Sánskára Vijnánam by Gangádhara Kaviratna :—BABU RA'MADA'SA SENA.

A'yurvediya paribháshá :—THE SAME.

Sangíta Sára, by Khetramohana Gosvámi :—BABU YATÍNDRA MOHANA THAKURA.

Report of the Sanitary Commissioner of Bombay for 1868 :—THE GOVERNMENT OF INDIA.

Report on the Vegetation of the Andaman Islands by S. Kurz : —THE SAME.

Selections from the Records of the Government North Western Provinces Vol. III, No. I :—THE SAME.

Purchase.

Revue Archèologique, No. XI, XII.—The Calcutta Review, Jany. 1870 :—The L. E. &c. D. Philosophical Magazine No 258 :—The Annals and Magazine of Natural History, January 1870 :—Deutsches Wörterbuch von J. Grimm und W. Grimm Vol. V :—Comptes Rendus, Nos. 20 25 :—Bohtlingk and Roth's Sanskrit Wörterbuch, 42 :—The Kamel, Part VI : – Recensis Numorum Muhamedanorum in Academiae Imp. Scient. Petropolitanæ, Museo Asiatico, &c., Tomus I :—Numismatique Arabeet Georgienne, V, Langlois :—Numismatique del Armenienne :—Münzen der Goldenen Horde :—Numismatic Journal Vols. 1, 2.

Das Muhamedanische Münzcabinet des Asiatischen Museums der K. Akademie der Wissenschaften zu St. Petersburg :

Exchange.

The Athenæum Nov. and Dec. :—The Nature Nov. and Dec.

PROCEEDINGS

OF

THE ASIATIC SOCIETY OF BENGAL.

An extraordinary General Meeting of the Society was held on Wednesday, 9 P. M., 16th March, 1870.

The Hon'ble J. B. Phear, President, in the chair.

The President said that the special object for which the extraordinary General Meeting was convened by the Council of the Society was fully explained in the notice issued which is follows :—

H. R. H. THE DUKE OF EDINBURGH

"having expressed a desire to become a member of the Asiatic Society of Bengal, an Extraordinary General Meeting of the Society is hereby convened by the Council of the Society, under Rule 31 of the Bye-Laws, for the purpose of proceeding in the matter of his election.

The Meeting will be held this day, Wednesday, the 16th instant, 9 P. M., at the Society's Rooms, Park Street."

The President observed that he had very little to add to what is stated in this notice. The report of H. R. Highness's desire to join our Society as a Member having reached too late to be brought before the last monthly meeting of the Society, the Council thought it desirable to convene an *Extraordinary General Meeting* for the special purpose that H. R. Highness may be elected before he leaves the shores of India, which he was so graciously pleased to honor with his visit.

The President then requested Dr. Fayrer to move the proposition.

Dr. J. Fayrer, C. S. I., briefly alluded to H. R. Highness's special wish to become a member of the Society and moved—

That His Royal Highness, Prince Alfred Ernest Albert, Duke of Edinburgh, be elected an ordinary member of the Asiatic Society of Bengal.

The President seconded the proposition which was put to the meeting and carried unanimously.

PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL

FOR MAY, 1870.

The ordinary general meeting of the Society was held on Wednesday the 4th Instant at 9 P. M.

Th. Oldham, Esq., LL. D., Vice-President, in the chair.

The minutes of the last meeting were read and confirmed.

Presentations were announced.

1. From A. Bloomfield, Esq., Deputy Commissioner, Balaghat,—eight pieces of silver and seventeen pieces of copper utensils, found near the village Gungeria.

The following letter, addressed to the Secretary and dated 7th April, 1870, accompanied the donation.

"A discovery of a considerable number of curious pieces of copper and silver has recently been made near the village of Gungeria, situated in the Mhow talook about 40 miles to the north of Boorha, the head quarters of this district. It happened in this way.

"2. On the morning of the 21st of January last, two boys tending cattle, saw sticking up from the ground what appeared to them to be an old piece of iron. They pulled it up and began grubbing up the earth where they had found it, and within a few inches of the surface came upon several other pieces. After this, a regular excavation was commenced, and 424 pieces of copper, weighing altogether 414½ seers (829lbs.), and 102 pieces of silver, weighing 80½ tolahs, were exhumed.

"3. The rough outlines* which I have sketched will give you

* Some others have been added to these and given on pl. II. The numbers in, or between, the figures shew the reduced length (vertical diameter of the rounded pieces) of each specimen respectively; the other measurements are in each case reduced in proportion to the length. [EDIT.]

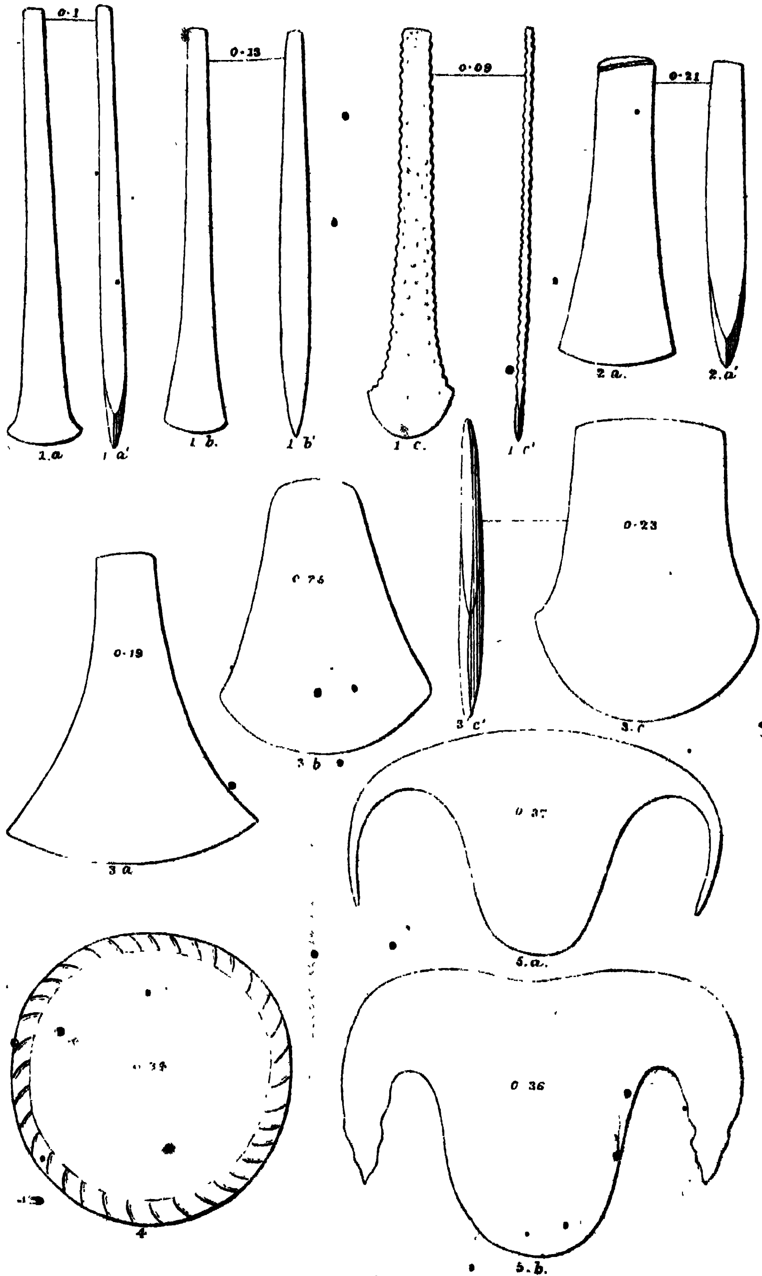
some idea of the shape and dimensions of the various articles.—I have this day despatched a box containing specimens of each.

"4. The copper pieces are divided into three sets shewn (on pl. II), in the figures 1, 2, 3, in all there are many variations in shape, size and weight. The following dimensions of the type represented by Fig. 1a—1c shew the principal difference in size of the various specimens in inches, as—length $24\frac{3}{4}$, $21\frac{1}{2}$, $17\frac{1}{2}$; breadth in front, or at the sharpened and wider end-4, 3; breadth near the middle $2\frac{1}{2}$, $1\frac{1}{2}$; the thickness varies from $\frac{3}{4}$ to $\frac{1}{4}$ inches. The various dimensions of the type represented by Fig. 2 are in inches: length $8\frac{3}{4}$, 4; breadth at the sharpened end $6\frac{1}{4}$, $5\frac{1}{4}$, $2\frac{7}{8}$; breadth above 1, $2\frac{1}{4}$; breadth in the middle $2\frac{1}{2}$; and the corresponding measurements of the form shewn in Fig. 3a—3c are in inches: length $7\frac{1}{2}$, $6\frac{3}{4}$, $5\frac{1}{4}$; greatest breadth in front, or at the sharpened end, $6\frac{1}{4}$, $4\frac{1}{2}$, $2\frac{3}{4}$; breadth above, or at the narrow end 4, $3\frac{1}{2}$. Of these copper pieces were found—of fig. 1, 90, of fig. 2, which gradually passes into the next, 25 specimens, and of the form shewn in fig. 3, 209.

"The silver pieces are principally of two different shapes, one circular and the other cornuted, somewhat like the upper portion of a bull's head with large downward curved horns, (see figures 4 and 5). The greatest diameter of these thin plates varies as follows—5 inches, $4\frac{1}{2}''$, $5\frac{1}{2}''$, the shorter or vertical diameter of the cornuted pieces varies from $4''$ to $5\frac{1}{4}''$. There were found 39 pieces of the form represented by fig. 4, and 63 of that represented by fig. 5a and 5b.

"5. The place where the discovery was made, is a piece of waste land, contiguous to the present village of Gungeria; the spot where the excavation was made, is about 100 yards to the south-west of the village, and about a mile from the nearest neighbouring village, the hole in the ground from which all were taken, is only about 3 feet long by 3 wide and 4 deep. All the inhabitants agree that, until about 20 years ago, this particular place was always covered with jungle; during that year it was cleared and planted with *kúdú*, and that since then, has been left uncultivated as a grazing-place for the village cattle.

"6. The oldest residents in the neighbourhood are unable to throw any light on the origin of these curiosities. The copper pieces, judging from their shape and size, appear to have been in-



for reference see p.132.

tended, some for axes and others for "phals" or spuds (an implement used for removing the earth adhering to ploughs). The silver pieces may have been used for ornaments, and the mark (about one-eighth of an inch in width) which is visible on all of them, leads one to believe that they were at some time or other set or inlaid in something, possibly wood, or lime; one disc of silver has a number of small holes pierced round the edge.

"7. The copper pieces when found, were arranged carefully, the longer pieces being in alternate transverse layers, and the others in regular order one above another. The silver was found in a lump by the side of the copper, all the plates adhering together, so that at first it looked like a ball of earth. The quality of both the silver and copper has been pronounced by local goldsmiths to be very good.*

"8. Nowhere within the borders of the village of Gungeria are there traces of anything which can lay claim to antiquity. But about 3 miles to the south-east, around the village of Mhow (or Mow), there are ruins of a Buddhist temple of considerable antiquity, and many roughly carved stones which show that, when the surrounding country was covered with jungle, this place (Mhow) was inhabited, and of some importance. About 4 miles to the north-east of Gungeria, on the top the hill of "Soonderdeyho" is a Gond shrine, of some note, surrounded by a low wall of loosely packed undressed stones; a path, winding between the rocks and clumps of bambús, and commanded at intervals by traverses of loose stones, leads up from the valley below. The hill is covered with, and surrounded by, thick jungle, so that, without guides, it would be almost impossible to find even the path leading to the shrine.

"9. The copper implements, or arms whichever they may be, are perhaps remnants of the copper age. Most of them have apparently never been used, but there are a few with turned edges and broken corners and other marks of wear and tear. The fact that hardly two of the copper pieces are of the same size, weight or

* Mr. A. Tween examined both, the copper and silver, and found the former to be almost pure; it contained only about one half per cent. of lead. The silver contained 0.37 per cent. of gold, which quantity is often to be observed in old silver utensils or ornaments. [Edit.]

shape, and the marks of the hammer (see fig. 1c), which are plainly visible on some, lead to the belief that all were made up by hand and not cast.

"10. The silver discs are nearly all of the same shape and size, but the horned pieces vary considerably; all are very thin. On first looking at these, the idea strikes one, that the circular discs were first made and the cornuted pieces or tridents were afterwards cut out of them. But on carefully comparing one with the other, it was found that some of the tridents are much larger than the discs and, therefore, could not have been cut out from them. No pieces, fragments or clippings of any kind were found.

"11. If these implements and ornaments are so interesting as at first sight they appear to be, you will perhaps kindly let me know the opinion of your Society, of their date, origin, &c. For my part, I shall be only too happy to give or procure for you any information I can gather regarding them, or any other remains of archæalogical interest in the neighbourhood."

Dr. Oldham drew attention to the remarkably good style of workmanship exhibited in the manufacture of these copper remains. Some of them were beautifully sharp and the hammer marks were still visible, but they hardly could be brought in close comparison with implements from the so-called copper age of Europe. Very few exhibited any proof of having been in use, one or two did so, either by the edges being chipped or broken, or by the hammered in and beaten tops. From Mr. Bloomfield's description of the locality and the condition under which these implements had been found, it appeared very probable that they formed a treasure or were accumulated and put away for safety. The silver pieces were said to be like those used to attach to the front of dedicated Bulls, but some of the native members would be better able to speak to this.

Bábu R. Mitra said that the silver pieces are somewhat similar to those now used for the object mentioned by Dr. Oldham, but he was in doubt whether those submitted to the meeting had really served the same purpose or not. The present race of cattle, he thought, had the horns turned upwards, not downward as in these, and pieces imitating the former shape are now in use.

2. From Bábu Gopináthа Sena,—a copy of a Table shewing the mean monthly variations of the Barometer in the Surveyor General's office, Calcutta, from 1855 to 1869.

From R. V. Stoney, Esq.—a piece of a calcareous tuffa taken out of a Sísú tree near Cuttack.

The following letter, addressed to Dr. T. Oldham, was received with the specimen,—

Cuttack, April 17th, 1870.

"By to-day's post I send you a bit of limestone which I took out of the heart of a Sísú tree.

"I do not know whether such a thing is generally known, or whether it is only down here where trees present such a peculiarity. Perhaps you will bring it to the notice of the Asiatic Society, if you think it deserves mention.

"Many trees in the Tributary Mehals have pieces of this stone in fissures in them, but principally Assin, Swarm, Sísú, and Ablous. I have seen a piece as long as 7 inches by 2 inches thick, but quite irregular in shape, it generally is found about six feet from the ground, the wood closes up again after receiving it. The natives use it for eating with pawn, and have a curious way of burning it, which is by putting a piece of the stone with a lighted bit of wood into a handful of straw, then turning a twisted straw rope round it, and swing it round the head for a few minutes, when it is found fully burnt, and ready for use."

Several members made observations on the specimen submitted. It appeared clear that the calcareous tuffa must have been formed in the tree, and perhaps the lime had been dissolved by the atmospheric water out of the substance of the tree and then again deposited. The only objection against this explanation would appear to be, that most of the trees, mentioned by Mr. Stoney as containing pieces of the lime, are growing on siliceous ground, and Mr. Kurz to whom the specimen was submitted, stated that he occasionally met with very small siliceous concretions in some of those trees, as also in bambús, but never with any deposits of lime.*

* The specimen, though enclosing portions of old wood of the tree, does not exhibit any such structure as would lead to suppose that the origin of formation can be attributed to insects; it rather seemed as if the decayed wood had been

Dr. Oldham promised to obtain further information on Mr. Stoney's interesting discovery.

From the Rev. C. H. Dall,—From Calcutta to London, by the Suez Canal.

From Wm. H. Dall, Esq., through the Rev. C. H. Dall,—Materials for a monograph of the family *Lepetidæ*.

The following gentlemen duly proposed and seconded at the last meeting were ballotted for and elected ordinary members.

Dr. Warth, Agra.

Dr. W. Schlich, Deputy Conservator of Forests.

J. E. Dobson, Esq., M. D.

C. Macnaghten, Esq.

Rájá Satyanand Ghoshál.

G. H. Damant, Esq.

The following gentlemen are candidates for ballot at the June meeting.

Bábu Vrindávanachandra Mandala, Zemindar of Balasore, proposed by Bábu Rájendralála Mitra, seconded by Mr. H. Blochmann.

W. W. Hunter, Esq., LL. D. proposed by the Hon'ble J. B. Phear, seconded by Dr. J. Ewart.

Sir Richard Couch, proposed by the Hon'ble J. B. Phear, seconded by the Hon'ble J. P. Norman.

Rájá Ameer Hussun, Khán, Bahádur, Talookdár of Mahmúdabád, proposed by Moulvie Abdoollateef, Khán, Bahádur, seconded by Bábu Rájendralála Mitra.

The following gentlemen have intimated their desire to withdraw from the Society.

Capt. W. J. Seaton.

E. Wilmot, Esq.

Bábu Priyanátha Setha.

The Council reported that, on the recommendation of the Philolo-

cemented by the lime. Mr. Tween made a rough analysis of a small portion of the specimen, and found that 50 grs. of the limestone lost on ignition 4.2 grs., and dissolved in nitric acid left 0.9 of insoluble matter. This equals to — organic matter - - - - - - - 8.4 per cent.
soluble (mostly carbonate of lime,) - - 89.8
insoluble (silica, alumina &c.) - - - 1.8. [EDIT.]

gical Committee, they have resolved that the following works be printed in the Bibliotheca Indica—

The Sáma Veda.

The Farhang i Rashídí.

The Council proposed—that the elections of the following gentlemen, not having complied with the conditions of Rule 5 of the bye-laws of the Society, are to be cancelled,—N. Daly, Esq., A. J. Hughes, Esq., the Rev. J. Marks, Lieut. C. H. T. Marshall, T. W. Rawlins, Esq., Major J. F. Sherer, Lieut. Col. J. Morland.—The proposition was carried.

—That Rs. 100 due from the following gentlemen, dead, be written off,—from J. Furlong, Esq., Rs. 64, R. Jardine, Esq., Rs. 12, J. Kavenagh, Esq. Rs. 24,—Carried.

—That the names of the following gentlemen, not having complied with the conditions of rule 13 of the bye-laws of the Society be struck off the member roll,—C. Davies, Esq., Mahárájá Sir Mánsing Bahádur, Bábu Rájendra Datta, Bábu Ramanátha Sásu, A. Fisher, Esq.—Carried.

The President also brought forward, on behalf of the Council, the following proposition, due notice of which was given at the last meeting of the Society: "That a donation of Rs. 100 out of the Society's Funds should be made in aid of the subscription for Mrs. Piddington."—Carried.

The following papers were read :—

I.—*Notes on Old Dihlí,—by* J. O. Tremlett, Esq.

(Abstract.)

Mr. Tremlett in this paper restricts his remarks to such ancient Hindú and Pat'hán buildings as have a historical or architectural interest, and are situated in or around the site of old Dihlí. The paper forms an excellent supplement to General Cunningham's reports, published in Vol. XXXIII of the Society's Journal.

The following places are described in this paper—the Tank of Súraj Kanḍh, the Colonnade of the Great Mosque at the Quṭb Manár, the mosques of Shamsuddin Iltitmish (Altamsh), Sulṭán Ghárí, the tomb of Ghiásuddín Balban, 'Ádilábád, the Palace of Fírúzábád, the mosques of Jahán Khán, the tombs of Fírúz Sháh Tughluq, Mubárik Sháh, Sikandar Lodhí, and the Púrání Qil'ah

The paper concludes with a very interesting chapter, entitled "*Proposed Criteria towards fixing the dates of Pat'hán buildings at Dihlí.*" Dr. Oldham read some portions of the paper and expressed the hope that Mr. Tremlett's notes may soon be printed in Part I of the Society's Journal.

II.—*On the Relation of the Uṛia to the other modern Áryan languages*, by J. Beames, Esq., B. C. S.

Mr. Beames, in this paper, alludes to the appearance of a Bengali pamphlet, 'Uṛia not an independent language,' by Bábu Kánticbandra of Balasore. Though 'destitute of philological acumen,' the book had caused some sensation, and induced Mr. Beames to institute a comparision between Uṛia and Prakrit. He had come to the conclusion that Uṛia was a sister, not a daughter, of Bengali.

Mr. Beames hopes in a short time to bring out his Comparative Grammar of the Aryan Languages of India, in which the arguments will appear in a fuller form.

Bábu Rájendralála Mitra then rose and addressed the meeting at some length. He said that all along he had been of opinion that Uṛia was a daughter of Bengali, and that Mr. Beames' arguments had not changed his opinion. He thought that Mr. Beames' proofs were very limited, both in number and force. The differences between Uṛia and Bengali were altogether so insignificant, that no calm observer would look upon them as anything but slight dialectical deviations or differences in pronunciation. He certainly believed with Mr. Beames, that a *chása* of Gumsar would not understand a *chása* of Dacca; but he also believed that a peasant of Kent would not understand a peasant of York, and yet no one would call the dialect of either a sister of the English Language.

Mr. Beames' paper and Bábu Rájendralála Mitra's strictures will shortly appear in the second fasciculus of the Philological Part of the Journal.

III.—*Note on a Persian MS. entitled* MIR-A'T UL QUDS, *a Life of Christ compiled at the request of the Emperor Akbar by Jerome Xavier, —by* H. BLOCHMANN, ESQ., M. A., *Calcutta Madrasah.*

The curious Persian MS. which I have the pleasure of exhibiting to-night, was given to me by the Rev. Mr. Don of the Calcutta Free

Church. The work is entitled *Mir-át ul Quds* or 'Mirror of Sanctity,' and is a Life of Christ, written in A.D. 1602, at the request of the Emperor Akbar, by Jerome Xavier, nephew to the renowned Francis Xavier. Hough in his History of Christianity in India, (Vol. II, p. 282) says of Jerome Xavier—'Having studied Persian for the purpose of commending Christianity to the Emperor himself, he composed two works in that language; the first entitled, *The History of our Lord Jesus Christ.* The second, *The Life of the Apostle St. Peter.* These works were interwoven with Persian legends,* which he imagined would render them more acceptable to his imperial disciple.' In a foot note, he adds—

'These two works, in manuscript, fell into the hands of Louis de Dieu, a celebrated professor of oriental languages in the University of Leyden, who published them with a Latin version, and some notes, "which, says the Jesuit Alegambe, were worthy of the fire." * * The purport of Louis de Dieu's notes was, to defend the Sacred Scriptures against the imputation of sanctioning such gross falsehoods as Jerome Xavier had mixed up with them. * * * Besides his works on the Gospel, J. Xavier composed a similar version of the Koran in Portuguese. * * *La Croze, pp.* 332, 333.'

The MS. before the meeting, is the first of the abovementioned works. Although Xavier's works have been translated, for polemic reasons, into Latin by Louis de Dieu, who was professor of Oriental Languages at Leyden in 1639, or twenty-two years after J. Xavier's death, I thought that the insertion in our Journal of a short notice of this curious MS., from a *literary* point of view, might not be out of place. On previous occasions I drew the attention of the members to the religious views of the Emperor Akbar, by laying before them passages bearing on this subject, which I had collected from Muhammadan Historians. A short notice of Le Dieu's translation itself might form a fitting sequel to my former remarks; but the discovery, in India, of a MS. of J. Xavier's text, is a

* This is not the case. Neither the Mir-át-ul-Quds, nor the history of St. Peter, contains Persian legends. That Jerome Xavier should have mixed up *Persian* legends, in order to please Akbar, is most improbable, unless Hough means *Pársí* legends. There is sufficient evidence in the *Mir-át-ul-Quds* to shew that J. Xavier was thoroughly acquainted with Akbar's religious views.

matter of some curiosity, when we remember the anxiety of Akbar's successors to destroy the monuments of his apostacy from Islám. Le Dieu's translation of the *Mir-át ul Quds* is not in our Library. We have only his text and translation of the life of Peter (No. 37 in our Catalogue).

The following is a translation of J. Xavier's préface.

Alláhú Akbar!

Mir-át ul Quds, in which an account is given of the wonderful history of I'shú' Kiristús, and of his heavenly teaching and his miracles.

Words intended to be spoken at the time of prostration (*zamínbos**) before His Majesty.

When the extraordinary accounts of the Messiah spread over the surface of the earth, Abgar, king of Edessa, desired to see him. He therefore sent a messenger to him with an invitation to come to his kingdom, the half of which was at his service. He also sent a skilful painter who was to take the likeness of Christ, so that the king might at least have a portrait of the Saviour, should he not be willing to come to Edessa. The messenger saw Christ and brought him the invitation.

When he heard that Christ found it inconvenient to go to Edessa, the painter 'collected his strength,' called his whole genius into play, and drew a likeness which surpassed his expectations. But when on the following day, he compared the portrait with the features of the Messiah, he was ashamed of his work. He then set about to alter it, and his feeling of shame left him, and he glorified God. The second and third days he studied the features deeper; but he only got more ashamed than he had been before. He renewed his attempts. All, however, was in vain: whatever he completed to-day, he had to reject the following day, till he despaired of his art, and grew thoroughly ashamed and sorry.

But Jesus had compassion on him, and asked him, at the time of his departure, to give him a cloth. The painter did so, and Christ drew it over his face and returned it to him. To his great joy, the painter saw that the saintly features of the Messiah had

* *Vide Aín* translation, p. 213, note 2. The story of king Abgar of Edessa was intended to furnish a parallel between J. Xavier and the painter; but there is a *lusus verborum* in the names *Abgar* and *Akbar*, which the Oriental mind understands to appreciate.

left a clear and faithful impression on the cloth. The painter took it to Edessa, and gave it to his king, who preserved it rejoicingly, and shewed it every honor and adoration. By its means he conquered all his difficulties.

This story I have, not without reason, put in the beginning of my work. Your Majesty has heard an account of Christ's sublimeness and greatness according to authorities* which differ in their evidence; and as you expressed a desire to have a truthful account, you were pleased, in your search for truth and love of wisdom, to order me, the meanest of your servants, Pádrí Jerome Xavier,† whom you have graciously admitted to Court, to write in Persian a history, containing everything done and said by Christ, as we find it in our books. Having been engaged in this calling for forty years, and studied Persian for seven or eight years, I now eagerly and zealously fulfil your Majesty's command. I have thrown my whole heart into this work, and girdled myself with the waistband of zeal; I have spent many days in completing this book, and denied myself the comforts, and even the necessaries of life, in order to carry out the wishes of your Majesty, who is God's shadow on earth. Royal orders cannot in a less degree be honoured, especially in matters which to conceal would do men harm, and which to promulgate is an act of worshipping God,‡ as the angel Raphael said to Tobias—'To guard the secrets of kings is good; but to make God's hidden wisdom known to men, is laudable and approved of by all.'

If in presenting this book and portrait of Christ to your Majesty I have been late, the truth is, that I made several attempts, thinking after my own fashion that I had completed it; but as often I made a clean copy of my rough notes, and compared the Persian with the features of the Latin (لطين, *latin*) original, I was dissatisfied, and what I had looked upon as complete, appeared deficient and defective, so much so that I, too, was ashamed of my work, and

* J. Xavier evidently means the numerous Muhammadan histories of the Prophets. Thus the *Rauzatuççafá*, a work which Akbar prized, contains a rich collection of Eastern tales regarding Christ.

† The text has زيرونيمو شوير *Zeronímo Shavír.*

‡ Akbar's favourite phrase; *vide* my Áín translation, p. 11.

dispaired of my capability and understanding. But I prayed without ceasing, and by the mercy of God, and the auspiciousness (*iqbál*) of your Majesty's reign, I have overcome my difficulties, and am now at last satisfied with my work. I therefore make bold to lay the book at the foot of your throne. May Christ bless your Majesty, and all that listen to its contents! I am perhaps not wrong in thinking that of all works which, during the reign of your Majesty, have been translated into Persian, this work will recommend itself most to your Majesty's attention; for no book of this nature appears to have been composed in former times, because either Persian scholars were not acquainted with Latin, or Latin scholars did not understand Persian, or because there never was a king who, like your Majesty, loves wisdom for its own sake, and searches for it with an equal amount of zeal.

I therefore hope that your Majesty will be pleased to accept this work, less for the labour and devotion which enabled your servant to complete it, but because it shews who Jesus was, and what he did and taught.

Let it be known that this book is divided into *four* chapters. The *first* chapter treats of the birth of the Messiah and of his life prior to the commencement of his teaching. The *second* chapter gives an account of his miracles and his doctrine. The *third* chapter describes the circumstances of his death, and what, in his love, he suffered for the salvation (*salámatí*) of men. The *fourth* chapter gives a sketch of his resurrection and ascension.

I have not written down all I could have written. However, the work as it is, will, I trust, sufficiently shew your Majesty, what Christ was.

As the footprint shows the size of the elephant, and the mark of the paw the strength of the lion, so will, I hope, this work shew your Majesty my zeal to serve you. I intreat your Majesty to order this book to be read in your august assembly; for its doctrine is the source of all virtue, and peace of mind, and balm for the soul. People may say that all books are balm for the soul; but this book above all others will give peace to your Majesty's heart, as Christ has said—'My word is balm for the soul, and eternal life.'

I have to premise that the greater portion of this work is taken from the holy Gospels, and I have avoided citing from other writings; but I have noted my authorities in the margin* of the book, where I have also given the headings of the several chapters. Several of the Christian doctrines set forth in this book may, indeed, defy and vex man's understanding; but they are a mirror reflecting Divine truth, and are fully explained in other works of mine which are nearly ready, and which, with God's assistance, will soon be finished.

May the Lord Jesus take your Majesty in His keeping and, according to the desire of your servant, vouchsafe you His knowledge, upon which alone the salvation of your soul depends.

Written at Ágrah, 15th Urdíbihisht (April) 1602.

The book ends with copies of two letters, one written by Pilate to the Emperor Tiberius and the Roman Senate regarding Christ, and the other written by 'Lintul,' Pilate's predecessor to Tiberius, regarding the external appearance of Christ.

J. Xavier then mentions a Maulaví of Láhor who assisted him in the Persian translation, and says—

'This sublime book and its auspicious preface have been compiled from the Gospels and other prophetic books by me, Pádrí Zeronímo Shavír, the Firingí, of the Society of Jesus, at present in Ágrah, by order of the king of kings, the enlightened ruler, the lord of the age, Jaláluddín Akbar, the greatest (*akbar*) of kings. May God perpetuate his reign!—; and Mauláná 'Abdussattár, son of Qásim, of Láhor,† now residing at Ágrah, has translated it, jointly with me (*ba ittifáq i man*), in the year 1602, the 47th year of the reign of His Majesty.'

* They are not given in the MS.

† Hough (p. 285) calls him '*Abdel Senarin Kasem*, which is no Muhammadan name. If Le Dieu gives this name, he must have read عبدالسنارين قاسم, for عبدالستاربن قاسم.

How well J. Xavier knew Akbar's peculiarities may be seen from the fact that he calls him *Jaláluddín Akbar*, instead of *Jaláluddín* Muhammad *Akbar*. Akbar disliked the name *Muhammad*. Abulfazl also, in his list of Akbar's Grandees in the Áín, leaves out the names *Muhammad* and *Ahmad*, whenever practicable.

The following table of contents of the first Chapter will give a good idea of the nature of J. Xavier's life of Christ.

Chapter I.

The Childhood of Jesus.

The birth of Mary. The good circumstances of her parents. An angel appears to her father at Jerusalem, announcing Mary's birth. The parents return to Nazareth. Anna, Mary's mother, conceives, Thursday, 8th December, or 16th *Dímáh* of Akbar's Era. Mary born, 8th September, or 15th *Shahríwar* of Akbar Era. Meanings of the word *Mary.* The angels announce Mary's birth to some inhabitants of Nazareth. Mysterious music heard from heaven. The inhabitants of Nazareth resolve to keep the 8th September a holiday. Papal edict of A. D. 1250 regarding the celebration of the Day. Mary is consecrated to God in the temple, on Friday, 21st November, or 29th Ábán of Akbar's Era, and put under the care of pious female teachers. An account of wonderful events which took place on her going up the steps of the temple. Her daily occupations in the temple, her virtues. She uses continually the phrase *Deo gracias.* She remains in the temple up to the age of thirteen. Wonderful election of Joseph as her husband. Joseph is forty years old, his virtues, his purity. How painters usually represent him. Reasons why Mary was married to Joseph, the chief object being to confound Satan, who knew from the prophetical books that the Messiah would be born of a virgin—hence, though watchful, he did not look for her among married women. Description of Mary, her slender wrist, oval face, light brown complexion, large blue eyes, golden hair, long hands, elegant fingers.

Birth of Christ. Gabriel's announcement. Mary's age is 13 years, 6 months. Meaning of *Nazareth.* Interview of Mary and Elizabeth. Inferences regarding the spiritual power of Mary. Birth of John. Doubts of Joseph. He will not complain to the Ruler of Nazareth, resolves to flee and leave Mary. God sends an angel to him in a dream. Christ born, exactly at 12 o'clock, midnight. Mary worships her son. Gospel events. No original sin. Events which took place in other parts of the world at the time when the Messiah was born. An olive oil spring appears in Rome, becomes a large river, and flows into the sea. The temple of Janus closed,

general peace. Conversation between the emperor Augustus and Sibylla, who shews him a likeness of Christ. Curious voices from heaven. A temple of Apollo falls in. Appearance of three suns in Spain, gradually flowing into one. In another part of Spain, a cloud of light appears.

Account of Herod. Jacob's prophecy that the Messiah would be born during his reign, is fulfilled. Circumcision. The three wise kings of Arabia, and an account of how their bodies, after their death, came to Constantinople, then to Milan, and at last to Cologne, where they are at present. Their coming was foretold in Psalm lxxi and Is. lx.

Jesus presented in the temple. Doubts of Simeon regarding the possibility of a virgin giving birth to a son. He thought that the word *virgin* was a mistake of a copyist. He is now convinced of his error. Story of Hannah the prophetess. A feast held to her honor in A. D. 570 at Constantinople, after an epidemic. The feast ordered to be generally observed by Pope Sergius (*pápah sarshio*) in 888.

Flight of Joseph to Memphis in Egypt. Miraculous power of the water of a well in which Jesus was washed. Murder of the children in Bethlehem. Herod kills his own son by mistake. The murder of the children is reported to the Emperor Augustus, who said that pigs were safer in the household of Herod than children. These children are the first Christian martyrs. Joseph returns from Egypt.

Jesus in the temple. A short history of the temple. The wickedness of Antiochus Epiphanes. Jesus continues obedient to Joseph and Mary. He does not teach before the age of thirty.

To judge from several quotations in Hough, it would appear that Le Dieu's MS. of the *Mir-át ul Quds* had no title. His edition of the 'Life of Peter' contains no preface; nor does J. Xavier mention himself as the author of the book. Le Dieu merely ascribes the book to J. Xavier, because it bears the same date (1602), and because the phraseology of both books is the same, a fact regarding which there can be no doubt. Mauláná 'Abdussattár is not mentioned. To the title *Dástán i San Piedro*, or

History of St. Peter, Le Dieu adds on the title page of his edition the words *ammá álúdah*, 'but contaminated.' Le Dieu's edition contains also a most interesting (Latin) letter written in 1598 by J. Xavier and Emmanuel Pigneiro, who accompanied Akbar to Kashmír, and back to Láhor and Ágrah. Their views regarding Akbar's character, the behaviour of the Hindús and Muhammadans towards Christians, and their moderate success as missionaries, &c., deserve the attention of the Historian. The letter contains also several allusions to the wellknown *cunabula*,* or representations, in wax, of the Messiah in the manger at Bethlehem, which the Pádris exhibited at Christmas to the amusement of Hindús and Muhammadans.

Instead of 'Hindús and Muhammadans,' J. Xavier uses 'Mauri et Ethnici,' which corresponds to the phrase 'Moors and Gentoos,' which we find so often in old Sanads of the E. I. Company, and in early histories. Orme was the first that objected to this term. For 'Mughuls' and 'Akbar,' the letter gives invariably the curious spellings *Mogorani* (sic) and *Acabar*.

There is nothing to shew that Le Dieu observed the historical value of J. Xavier's books: he was too much engaged in hot controversy to be struck by the tolerance shewn by a Muhammadan ruler towards Christians.

The Persian of J. Xavier's work is easy and flowing. There are very few passages, if any, that sound 'outlandish.' Le Dieu did not detect any linguistic flaws either. One phrase, however, struck me as peculiar. 'Pádrí J. Xavier, of the Society of Jesus' is translated by—

پادري زيرونيمو شويراز طايفۀ صحبت ايشوع

—but *çuhbat* does not mean 'Society,' but 'society' in the sense of 'friendship.'

* This word has enabled me to correct a corrupt passage in the History of Akbar by Badáoní, printed in our *Bibl. Indica.* 'Cunabala,' transliterated would be كنابلان, with a final *nún i ghunnah.* The MSS. of Badáoní (vide my Áín translation, p. 193, *l.* 3 from below) have a word بلبلان or, without dots, بلبلان, for which we have no doubt to read كنابلان. The passage translated would thus be—

'The ringing of bells as in use with the Christians, and the shewing of the figure of the cross, and the *cunabula* at their feast, and other childish playthings of theirs, were daily in practise [at Akbar's Court].'

In his transliteration of foreign names, J. Xavier naturally follows the pronunciation of his mother-tongue. For Biblical names, however, he follows the Hebrew, which he had evidently studied. Thus he writes—

كفرنحوم, *Kafarnahûm*, Capernaum, according to the Hebrew כפרנחום

ايشوع, *I'shû'*, Jesus, for ישועה

عالمة, *'álimah*, a virgin, or rather, a young woman, Is. vii. 14, for עלמה *'almáh.*

J. Xavier also proposes four new, but rather fanciful or impossible, etymologies of the word *Mary*, or *Miryam*. He says it means 1. *high*. It seems as if he had derived it from רום. 2. *Sea of bitterness*, from ים *yám*, sea, and מר *mar*, bitter. 3. *Teacher*. It is difficult to guess what Xavier means; perhaps he derives it from מורה, the Part. Hiph. of ירה *to teach*. 4. Master (Mistress?) of the Sea, from the Chaldee מרא Lord, and *yám*, a sea. The usual etymology from מרי, the 'rebellious,' or 'coy,' is not given.

Mr. Don's MS. also contains a small collection of 'Prayers' in Persian.

IV. *Gentiana Jæschkei*, re-established as a new genus of *Gentianaceæ*, by S. Kurz, Esq.

The President suggested that this paper be considered as read, as it only contains detailed descriptions,—and that, on account of the late hour, the following papers be postponed for the next meeting—

V. Notes on the Andamanese, by Surgeon F. Day.

VI. Notes on a trip to the Andamans, by V. Ball, Esq.

VII. A short list of Andaman Test words, by F. A. de Röepstorff, Esq.

VIII. Notes on Archæological remains found near Taxila, by J. G. Delmerick, Esq.

IX. Archæological Notes, by A. C. L. Carlleyle, Esq.

LIBRARY.

The following additions have been made to the Library since the last meeting, in April :—

Presentations.

*** Names of Donors in Capitals.

Proceedings of the Royal Society, Vol. XVIII, No. 114 :—THE ROYAL SOCIETY OF LONDON.

Journal Asiatique, Tome XIV, No. 54 :—THE ASIATIC SOCIETY OF PARIS.

Quarterly Journal of the Geological Society, Vol. XXVI, No. 101 :—THE GEOLOGICAL SOCIETY OF LONDON.

Bulletin de la Société de Géographie, 1870, Février :—THE GEOGRAPHICAL SOCIETY OF PARIS.

Memoirs read before the Anthropological Society of London, Vol. III :—THE ANTHROPOLOGICAL SOCIETY.

Anthropological Review, No. 27 :—THE SAME.

Reports of the Agri-Horticultural Society of the Panjab, 1869 : —THE AGRI-HORTICULTURAL SOCIETY OF THE PANJAB.

On the Excavation of a large raised Stone circle or Barrow near the village of Wurreegaon, near Kamptee, by Major G. G. Pearse :—THE AUTHOR.

On Turtle and Fish-oils, by F. Day, F. L. S., F. Z. S :—THE AUTHOR.

Mabda-i-'Ulúm, translated into English, by 'Azímuddín Ahmad :—MAULAVI SAYYID KARAMAT ALI.

Mákhaz-i-'Ulúm, translated into English, by 'Obaidullah :—THE SAME.

Mabda-i-'Ulúm, in Urdú, by Maulaví Karámat 'Alí :—THE AUTHOR.

Calcutta Journal of Medicine, Nos. 11 and 12 :—THE EDITOR.

Ueber die Sprache Jacob Grimms, von Karl Gustav Andresen :—W. STOKES, ESQ.

Der Ursprung der Sprache, von L. Geiger :—THE SAME.

Transactions of the Royal Irish Academy, Vol. XXI :—THE SAME.

First Annual Report of the Sanitary Commissioner for Bengal, for 1868 :—THE GOVERNMENT OF BENGAL.

Progress Report of Forest Administration in the Province of Oudh for 1868-69 :—THE SAME.

Progress Report of Forest Administration in British Burma for 1867-68 :—THE SAME.

Progress Report of Forest Administration in Bengal for 1867-68 :—THE SAME.

Report on the Land Revenue Administration of the Lower Provinces for 1868-69 :—THE SAME.

Table shewing the mean-monthly variations of the Barometer in the Surveyor General's Office from 1855—1869 :—BA'BU GOPINATHA SENA.

Purchase.

Die Süd-Afrikanischen Mollusken, von Prof. Dr. Ferd. Krauss :—Calcutta Review, April 1870 :—Revue Archeologique, Fév. 1870 :—Annals and Magazine of Natural History, No. 27 :—The L. E. and Dublin Philosophical Magazine, No. 260 :—Revue Linguistique, Jan. 1870 :—Ibis, No. 21 :—The Quarterly Journal of Science, January, 1870 :—Comptes Rendus, Nos. 6 and 7 :—Alphabetical list of Sanscrit MSS. in the India Office Library, London.

PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL

FOR JUNE, 1870.



The monthly meeting of the Society was held on Wednesday, the

Pages 192—216 are issued supplementary to the Society's Proceedings for May, 1870.

found in the Alti Hills.

2. From M. L. Ferrar, Esq., C. S.—a packet of copper coins which, Mr. Ferrar writes, had been dug up near Partábgaṛh on the ancient site of a fort, said to have belonged to the Bhurs who held the country before the Rájpúts took it.

Mr. Blochmann said.—

The coins which Mr. Ferrar has presented to the Society, are all Muhammadan copper coins. One belongs to Jaláluddín Fírúz í Khiljí, one to Muhammad Sháh Tughluq, two to Ibráhím Sháh Sulṭán of Jaunpúr, and three to Sikandar Sháh ibn i Buhlúl Lodhí. The others I cannot make out. Copper coins of Ibráhím Sháh of Jaunpúr and of Sikandar Sháh occur in prodigious quantities in Audh. The Sikandar Sháh of 917 A. H. sent by Mr. Ferrar, is of some interest, because the beginning of the legend is very distinct, and corrects the reading proposed by Marsden (II, p. 546). He reads المنور ..... الرحمن سکندر شاه بن بهلول السلطان, but Mr. Ferrar's coin clearly gives المتوکل بالرحمن, for the almost meaningless المنور.

But I have not seen a single specimen of Sikandar Sháh's coins, which contains the name of the Egyptian Khalífah.

Among his notes on Jaunpúr coins, Marsden (p. 557) mentions as a peculiarity the occurrence of the term مملكة '*dominatio*,' and that 'the word سلطاني takes the form of an adjective.'

But سلطاني is an abstract noun, and is used as a title instead of سلطان, just as on every page of the Akbarnámah or Badáoní we find جهانباني, شهنشاهي, &c., for جهانبان, and شهنشاه.

3. From Bábu Gopinátha Sena—a table shewing the mean monthly and mean hourly variations of humidity, as determined at the Surveyor General's Office Observatory.

4. From Col. G. B. Malleson, Mysore—a lithographed copy of Ashtánga Hridaya.

The following gentlemen duly proposed and seconded at the last meeting were balloted for and elected Ordinary Members :—

Bábu Vrindávana Chandra Maṇḍala.

W. W. Hunter, Esq., LL. D.

Sir Richard Couch.

Rája Amír Hasan, Khán, Bahádur.

The following gentlemen are candidates for ballot at the July meeting :—

E. Lethbridge, Esq., M. A. Professor, Húglí College, proposed by Mr. Allardyce, seconded by Mr. Blochmann.

A. R. Miller, Esq., proposed by V. Ball, Esq., seconded by the Hon'ble J. B. Phear.

The following gentleman have intimated their desire to withdraw from the Society :—A. H. Pirie, Esq.; W. Smith, Esq., C. E.; R. V. Stoney, Esq.; R. A. Gubboy, Esq.; Dr. J. Fawcus.

The following letters have been received:

—From His Royal Highness, Prince Alfred, Duke of Edinburgh, thanking the Society for the honor they have done him by electing him an Ordinary Member of the Society, and expressing his desire to become a Life member of the Society, in conformity with Rule 14 of the Bye-Laws.

—From the Government of India, Correspondence regarding the silver pieces and copper utensils found near Gungeria, an account of which was printed in the Proceedings for last month.

—From the Government of India, Correspondence* on certain excavations of cairns and stone circles at Khairwarah in the Wurdah District.

The following papers were read :—

I.—*Observations on the Andamanese*, by Surgeon FRANCIS DAY, F. L. S. and F. Z. S.

[Received 2nd March, read 1st June, 1870.]

The inhabitants of the Andaman islands have for many years been looked upon with great curiosity by Ethnologists,† by mariners, and by the Indian Government, in consequence of their vicinity to our convict settlement of Port Blair. Exaggerated accounts have been given of their appearance ; they have been regarded as cannibals ; pieces of flint, now used for shaving or tattooing, have been described as arrow-heads for shooting fish ; in fact their showing themselves on the shore has given rise to as much awe as that of large wild carnivorous animals bent on mischief. Merchant vessels generally kept many miles to the East of Barren island, in order to avoid contact with the aborigines.

Having been lately directed to proceed to the Andamans for the purpose of making certain investigations respecting the fisheries‡ I took the opportunity of obtaining as much information as I could respecting the aborigines. In my enquiries I was warmly seconded by Mr. Homfray§ the energetic officer who, (amongst his other duties,) has charge of these people and their "Homes," and who alone, amongst the foreign races, has mastered their language. I also carefully went through Mr. Homfray's monthly reports. Consequently a large amount of the information, contained in the following, was derived from him, whilst he accompanied me in my

* The publication of this Correspondence has been postponed until more extensive information can be obtained.

† It is stated at the Andamans, that many skulls of convicts have been sent away as those of the aborigines, whilst *a tame monkey, received from India* and given to the crew of a passing man-of-war, has lately received a new specific name in London as being indigenous on these islands !

‡ Much of this information is contained in my report on the fisheries of the Andaman islands. I have, however, drawn it up more in detail, as the former is not available for the general reader.

§ Known to the Andamanese as *Myo-jolah*, "master of masters."

wanderings with the Andamanese around the various stations, looking out for the best fishing-grounds. These people worked with us in the jungles amongst the small streams, they speared fish in the harbours, shot them with bows and arrows, or captured them with their hands, or by means of small nets in the sea, and elsewhere they collected shells, crabs and reptiles, and in fact appeared desirous of doing whatever they were able.

I do not propose in this paper entering into any speculations respecting the origin of these people,* but to confine my remarks to their present appearance, manners, customs, language, amusements and methods of providing themselves with food.

Those now living on the island are estimated to be about 1000 in number, but this must be a guess, as no means are available by which such could be verified or refuted. Around the settlement, there are better means of estimating their strength, and there they appear to be about 400, divided into tribes, rarely above 30 strong, for when they are more, they quarrel. The country is partitioned amongst them, and one tribe does not interfere in the territory of another, in fact such used to cause war between them. Tribes fix upon a spot for a depôt, here the sick are tended, and any extra supplies, they may have, are hoarded. On two tribes meeting, the great sign of friendship is the presence of women, for when hostility is intended, the weaker sex are sent to a place of safety.

Their huts, if they deserve the name, are merely palm tree leaves most loosely put together; they try and get shelter under any overhanging trees or rocks. Bones of animals or fish which have been eaten, shells, &c. &c. are all thrown into one heap close by, the smell of which is very offensive. When they can no longer bear it, they move on, returning when they imagine disagreeable odours have disappeared.

These people, when guests of Europeans, or expecting presents, have moderately good tempers, but a very slight offence rouses

* Some may be of African origin or mixed African descent, their woolly hair and other signs apparently afford such a solution, but some again have entirely smooth hair, and but few very thick blubber lips or the Hottentot's projecting jaws. Shipwrecked sailors have generally been killed by the arrows and spears of the Andamanese, or else the last few survivors have been kept as slaves and thus assisted in continuing this mixed race.

them. When in their jungles they are said to be very irritable. One evening after we had returned from fishing, the aborigines retired to the "Home" at Port Mouat, when a lad of about 8 years ordered a girl, much older than himself, to go and bring him some drinking water; as she did not move at once, he shot an arrow at her which took effect just above the eyebrow. Another day one small boy with a knife cut to pieces a girl's basket for some equally cogent reason.

Quarrels in the "Homes" are of frequent occurrence, but the riotous ones mostly listen to the words of the elders, and become quiet. If, however, one of them refuses to be appeased, the other sits quite still, and does not answer him, and this mostly ends in an arrow being shot near, rarely hitting him; subsequently all is over. They do not appear to be vindictive amongst themselves. In November 1864 the North and South point tribes, having had a misunderstanding, were induced to meet and a pig was given them for a feast. However they again fell out, and the knife which had been supplied to kill their food, was employed by one of the South tribe to threaten the life of one of the North, and all ended in a terrible row. It was some time before order was restored, when they embraced and howled for a quarter of an hour.

One of the last great quarrels with the convicts occurred in June 1864, and was occasioned by a murder committed in the following manner. On the morning of the murder, the aborigines entered the north outpost in some numbers, carrying with them their bows and arrows, and begged for food, but did not obtain what they considered sufficient. They asked for more, which was refused, and being irritated, they sought their opportunity, and while the Tolidar G i r b a r S i n g was off his guard, J a c k o, the chief of the North tribe and M o r i a r t y, chief of the South tribe, fired at him with their arrows from a few yards distance, and with fatal effect. G i r b a r S i n g was the man whose duty it was to punish them, a class of persons not generally looked upon favourably.

Amongst themselves they usually give up anything another may wish for, so should they desire to retain an article, they secrete it.*

* A walk with them through a bazaar is no sinecure, they want everything they see, think it very hard not to get what they ask for, and steal whatever

Should an European they know be at his meals, and they are allowed to come inside the room, he has but little chance of concluding in peace. They mount the chairs, get on to the table, look at, and often touch everything. One will say to another, that piece is mine, and so on, in fact they apportion out everything amongst themselves, and watch with much interest all that is eaten. If he does not soon cease, remarks become more severe. "What a greedy man he is!" "He will eat everything, leaving us nothing," and so on. If he drinks any liquor, they consider most of the "grog", as they term it, should be theirs.*

Their language is very deficient in words, and the different tribes have distinct dialects. So much is this the case, that the inhabitants of the Little Andamans are unable to understand those of the South Andamans. Now many English and Hindustani words are beginning to be incorporated with their language. As for numerals, they are entirely absent, a necessity for them has not as yet been perceived by these people, so when they talk of having taken quantities or numbers of anything, it is impossible to have any idea of their meaning, and what still more increases this difficulty is, that in framing an answer, they often do so from the question, almost repeating the same words. This has perhaps led to their being considered more untruthful than they really are. Thus being asked, if it is true that a wreck has occurred, they will probably say it has, and perhaps it has, at some period long past.

They divide the day into three portions, sunrise, midday, sunset, recognising no subdivisions. In like manner, the year with them has three seasons: *first*, the dry, *ea-ra-bodilin*, or Northern sun, a period which extends from February to May: *secondly*, the rainy *goo-mo-lin*, being from June until September: and *thirdly*, the moderate season, *Pa-pa-lin*, lasting from October to January.

they can lay their hands upon. Secreting articles is not looked upon as a wrong deed, but as cleverness by these people.

* Being asked one day how the owner of the dinner was to live, if they deprived him of what was his food, they were very ready with an answer, observing, If we poor people want fish we must catch it, if we require pigs we must kill them, if we wish for a hut we must build it, but it is not so with you. You never built the house you live in, you did not make the furniture, grow your rice, catch your fish, kill your mutton or even cook your food. You call to some one to bring you what you want and it comes, so if we eat all this, you have only to call for more. They thus finished the argument, and almost as rapidly consumed all the food.

They are by no means deficient in acuteness, and appear to have good memories, thus they soon discovered that they were called by the newcomers by names anything but complimentary, and as every race has such epithets at their disposal, which they freely employ, the Andamanese (who like a joke) recognise each race by the several terms of abuse which were used in addressing them.

On first seeing writing employed, they laughed at it, protesting the impossibility of making out what had been committed to paper, and now they look upon it with great curiosity.

Crying signifies with them reconciliation with enemies, or joy at meeting old friends or acquaintances from whom they have been long parted. When two tribes meet, the newcomers have to commence, and the women have the priority in weeping; subsequently the men take it up; whilst it becomes the duty of the hosts to reciprocate in the same manner, first the females weeping, and afterwards the males. Occasionally, the performance cannot be completed in one night, especially should the parties have been long separated, it may even be continued through several successive days. After the crying has been completed, dancing begins; that of the women, a few years since, differed from that of the men, they having to clap their hands, &c., sing to the music of the stamping of the men's feet. Their songs are the recital of events which have taken place since their last separation. The conclusion of the performance is for both parties to join in a grand dance. Now, however, the men and women occasionally dance together. Females who intend dancing, have the modesty to employ a few extra leaves, and they relieve the men in striking the sounding board with their feet. Should it be the intention to dance all night, an extra coating of paint is put on, which is said to act as a preventive against exposure. It is very evident that dancing is a favourite amusement. Having occasion one day (as we were starting upon a fishing excursion) to go inside one of the convict barracks at Port Mouat, the Andamanese set to work to dance with great vigour on the boarded floor, and it was with the greatest difficulty that we could induce them to desist.

They do not appear to have many amusements. Staring at them-

selves in a looking-glass is a great attraction. Having held a watch to the ear of one at Port Mouat, the next day every body of the tribe came to listen to the ticking, with which they seemed as delighted as children. The day I arrived at Viper, they saw a kite for the first time, and were excessively pleased at flying it, doubtless once having seen it, they will now manufacture them themselves. Excellent as is their aim in throwing stones, some one last year showed them how to connect two stones together by a piece of string, and to throw them up, so that they catch in the branches of a tree at a great height from the ground.

Although clothes scarcely form part of their attire, they always beg pieces of cloth, and it is curious to see how they mimic those who consider garments a necessity. Their laziness is probably not to be surpassed; sooner than get a bamboo to knock down fruit, they will cut down the tree or its branches. They seem to think the convicts are an inferior race, and should work for their benefit.

In mentioning the *clothing* of these people, perhaps an incorrect term is employed, for the males are essentially destitute of it. Paint forms their clothing, its mode of application shows whether it is put on for simple ornament, with the intention of joining in the dance, to prevent sickness, drive away disease, or is a sign of mourning. Sometimes, however, a few fibres are fantastically worn around the forehead, neck, waist, or below the knee, in the form of a garter, but all other clothing they consider immaterial. They believe themselves to be decent, and laugh at other people's ideas of propriety; still when landing at Ross, they used not to object, as a favour to the residents, to wearing trousers for the occasion, and these were kept ready for them at the landing-place, being returned on their re-embarking in their canoes.

The women, however, have some slight show of decency, for they twist up fibres into the form of thin ropes, which they cover with cloth and wear round their waists, whilst dependent behind, (also sometimes in front) are about a dozen tails hanging half way down to the knees, anteriorly two or three leaves fresh gathered from the jungle, completes their essential costume. As ornaments, they wear a string of their ancestors' bones around their necks, or a skull is slung in a basket over their backs, or a belt on their shoulders,

should they have a baby to carry. Destitute of clothing themselves, these savages pity foreigners going through their jungles, especially in the rains.

Painting or adorning the body is done with red or olive-coloured earth, and this is the business of the females. For the former, iron is collected from a mineral spring, burnt red* and mixed with fat, and this is used as an ornament or charm. I had an opportunity of seeing one of these springs, and the aborigines were excessively jealous, lest I should help myself to any of the exuding iron, as they required it all for themselves. They collected it into leaves, binding it up into parcels with fibres. Olive-coloured mud is likewise a decoration, when painted in an ornamental manner, but if the body, head and forehead are daubed over with it, and the head plastered with mud, it is a symbol of mourning.

All the adults have their bodies tattooed, which operation is commenced from an early age, and until it is completed, they are not considered eligible for marriage. As soon as they begin to swim, which is at about 8, tattooing begins. Formerly it used to be done twice a year, the instrument employed being a piece of sharpened flint bound to a stick; but now a smaller portion of the body is operated upon once a fortnight, and this goes on until the individual is adult. The present instrument is a bit of a broken bottle, inserted into the split extremity of a stick, for they dread a knife. A considerable amount of blood is lost in these operations, which are performed by making an incision nearly one-third of an inch long and going to some depth. They do not form figures as is done by the Burmese.

Having an objection to hair, they shave all off, with the exception of one narrow strip from the crown to the nape, which, however, is kept cut close. They rarely have eyebrows, beard, moustache or whiskers, and usually but few eyelashes. Formerly shaving

* Dr. Waldie having been good enough to analyse their red preparation, reports it to be as follows:—

Peroxide of iron, ...	42·7
Quartz in small fragments and very little of any other rocky or earthy matter, ...	56·4
Water expelled by ignition, ...	·9
	100·0

was done every six months, by old women, with pieces of sharpened flint, but now every fortnight by means of bits of broken glass bottles. This custom is evidently a sanitary one, as the jungle is so full of insects, that it would be impossible to keep the hair free from vermin.

They marry as soon as they are able to support a wife, and I understood that the rule was, only to have one. The youthful swain eats a peculiar kind of ray fish termed *Goom-dah*, which gives him the title to the appellation of *Goo-mo*, signifiying "a bachelor desirous of marrying." Girls, arriving at a marriageable age, wear certain flowers, to distinguish themselves by. Before marrying, young men take a species of oath, after which they sit very still for several days, scarcely taking any food. Those who have been pig hunters refrain for one year, commencing in April, from eating pork, using turtle, tortoise or fish instead, but they do not cease hunting pigs, as they are necessary for the food of the tribe. The turtle hunters in like manner use pork during this probationary year, and during this period honey must not be tasted. This is apparently done for the purpose of ascertaining whether the individual is able to support a family.

The marriage ceremony is simple, a man about 16 or 18 is engaged to a girl of 13 or 15 belonging to a different family, with the consent of the girl's guardian, who is generally the chief of the tribe. On the marriage day, they are seated apart from the others, and pass their time in staring at one another. As the shades of the evening set in, the girl's guardian advances, and taking the hands of the pair joins them together; they then retire into the jungles, where they pass their honey-moon. On the bridegroom's return to the tribe with his bride *Jeedgo*, crying and dancing are kept up with great spirit. Subsequent to marriage, they are not so useful as previously for the general welfare of the community, the married woman, termed *Chamah*, has now to erect her husband's hut and attend to his requirements, consequently she is not ordered about by the chief.

The wife has to perform all the home duties, providing shelter, mats for lying upon, cooking the food, procuring water and shell fish, carrying loads when changing from place to place, shaving

and painting her husband, as well as attending him when sick. The husband has to protect his wife, make canoes for fishing, the implements for hunting pigs and turtle and spearing fish, whilst he also obtains food when not provided by the bachelors or spinsters.

Widowers and widows have no objection to re-marry, I saw one woman who had done so within one month of her husband's death, but this was looked upon as rather premature.

When children are born, the infant is first bathed in cold water, and then warmed over a fire, on the supposition that by beginning early to stand changes of temperature, it will be of a hardy constitution. They do not appear to be very successful, however, in rearing their little ones. Men and women seem equally fond of carrying the babies about; all pet them; when they cry for anything, they give it; and over-kindness early consigns the little one to the grave.*

Children are named some months before they are born, after some family or favourite cognomen, consequently there is no distinction between that of the males and the females. Owing to their vocabulary of names being limited to about twenty, they have to prefix some word to each, expressive of something in the appearance of the individual, or the locality from whence they come.

Amongst the numbers of Andamanese I saw, there was only one woman who had as many as three living children, of this she appeared to be very proud, and I was informed, that no other family possessed more than two. From April 1868, to April 1869, 38 deaths were reported, and only 14 births amongst those families which reside near our settlements. During four years, only six infants have lived, whose parents resided at the homes; of monthly visitors only 12, and of the half yearly ones some 20.

The Andamanese, at least those who reside near the settlement, are not a long lived or healthy race: but few appear to pass two score years. They suffer severely from fever and lung complications, and although the jungles are their natural home, illness

* Those children which are brought up in our schools, and clothed, rapidly succumb, as might be anticipated, to the non-clothing and exposure system, to which they become exposed on returning to their families, and resuming their life of freedom.

attacks them in newly cleared pieces of land as virulently as it does the foreign races. The sun's rays and strong winds act injuriously upon them, in fact they say a chief of the evil spirit rides upon the strong sea breezes and causes sickness. The high winds and the rains in August are occasion of a good deal of fever and bowel affections.

They have no remedies except their olive-coloured mud, with which they plaster themselves for headaches, and also employ as a non-conductor of heat. In 1864 one having been wounded by slugs whilst pillaging, the only remedy his tribe knew of was covering the spot with their red or olive paint. Now they have great faith in quinine, and take it readily for fevers or headaches. If medicines are offered them, they invariably request the donor to taste it first, and subsequently they have no objection to swallow it.

Should an adult die, he is rapidly buried, and the tribe migrates for about a month, to another locality, at least eight or ten miles off, in dread of the ghost of the departed. A corpse is viewed with much fear, whilst almost equal repugnance is shown when going near a burial-ground, which with them is never on a hill nor or an elevated piece of the country. The following instances give an idea how their chiefs are buried.

J a c k o, chief of the North tribe, died on July 1st, 1865, leaving two married sisters, whose husbands' duty it was to bury his corpse. Death took place at 6 A. M. and within two hours his remains were rolled up in leaves by the oldest people of the tribe, and corded with fibre, preparatory to their being consigned to the grave. The latter was merely two feet deep, and merely a few feet above high water mark. Here the corpse was placed in a half sitting position, with the face turned towards the rising sun. Previous to filling in the grave, one by one they took their last farewell, and each gently blew upon his face and forehead. After the grave was filled in, there did not remain more than six inches of earth above the body, but this is deemed sufficient to preclude the ribs from being broken, whilst there are no wild animals to exhume the corpse. A few stones were now heaped over the grave, above these some burning faggots, and mourning garlands were placed in conspicuous places along the shore, to mark a chief's interment. Before retiring, a cup

of water was left at the head of the grave, in case the spirit of the deceased should feel thirsty during the night.

Four months subsequently, the nearest of kin went to the place of sepulture and brought away the lower jaw, which about that time had become divested of flesh; a month afterwards, the shoulder bones and a rib were extracted, and after six months the skull, now freed from impurities. This was slung round the neck of the principal mourner, and subsequently every one had it in turn to carry about.

The ceremony for the burial of a chief is, however, generally somewhat different from that described for J a c k o. A stage is erected some twenty feet from the ground, and on this the corpse is placed. The powerful spirit of the chief it is hoped will be satisfied, and not injure any one who may incautiously pass near, whilst a fire is lighted below this stage to scare away any evil spirits which may be lurking about. The extraction of the skull and bones, it is considered, requires great skill and courage, whilst by keeping them carefully, and wearing them during pain and sickness, it is supposed the ghost of the departed will be induced to be friendly to the wearer.

Should a stranger die amongst a foreign tribe, his funeral-rites are entirely neglected, the chief generally directs some of the young men to carry away the corpse, and throw it into the jungle or into the sea. The evil influences of a stranger's spirit are not dreaded.

Should those of other tribes go to condole and sympathise with a widower, the custom is to fall into his arms, both embracing each other and crying for about ten minutes, subsequently the afflictions are recited.

When I was at Port Mouat, the Rutland chief was in mourning for his only child, and was daubed all over with olive-coloured earth (a process which is repeated daily), whilst a rather thick coating of mud covered his head. This mourning lasts for one month. During periods of deep sorrow they are very silent, entirely refraining from the use of red paint and other decorations, from taking much food, even from eating their favourite pork, whilst honey must not pass their lips, but instead they have daily to throw honeycomb, if obtainable, into the fire. As soon as the period of mourning has

expired, they wash off the olive-coloured earth, and revert to their red paint.

Having no ties to keep them to one place, the Andamanese wander about for food, or as their fancy dictates. They have scarcely a want, but as luxuries they esteem tobacco, especially Cavendish, and "grog." They do not care for sugar, but are immoderately fond of honey, they eat the *cuttle fish*, are much addicted to *chitons*, but despise raw oysters. Formerly they appear to have consumed almost anything; on wet days worms, caterpillars, roots, nuts, mangrove seeds, sharks, shell-fish, &c., &c., articles which they now generally refuse. Amongst fish, they prefer the mullet, and one day having placed a quantity of different species before them, they helped themselves in the following order, observing that the first took the best, the last got those which were most inferior: *Chorinemus*, *Platycephalus*, *Horse-mackerel* or *Caranx*, *Chrysophrys calamara*, and lastly *Tetrodon* or frog-fish, which latter has generally the credit of being poisonous. They eat cats, but now spare dogs, because they are found to be useful.

Government instituted various Homes or places of shelter for these aborigines, which many of them make their head quarters. It is a principle wisely commenced, to induce them to cease plundering, and which has most undoubtedly had a very satisfactory effect. But it is a mistake to suppose that they subsist on the food provided by Government, for the whole allowance is only 200 rupees monthly to cover all expenses. In the year 1868-69, the following were the earnings of the aborigines: 500 pigs, 150 turtles and tortoises, 20 wild cats, 50 iguanas, and 6 dugongs, irrespective of fish. The total number of rations given was 48,248, giving a daily average of 132 persons, including women and children, allowing each individual only 9 pies daily, and showing an increase in those fed of 14,575 rations over the previous year, but with a decrease of expenditure of Rupees 209-3-4, thus demonstrating them to have been more self-supporting. Since the establishment of these homes, a great change has been inaugurated, the convicts are left unmolested, implements of agriculture are not stolen, the fishing stakes are left undisturbed, the gardens are no longer pillaged, run-away convicts have been re-captured, and shipwrecked sailors assisted.

At the "Home," the following is the manner in which they pass the day. At a very early hour they have something to eat, for about 4 A. M. their uncovered bodies become cold, which necessitates their replenishing their fires, and once up eating begins. When residing in the same house, there is no rest after this early hour. About 7 A. M. some of the men go out foraging according to the season: it may be pig-hunting, fishing, or capturing tortoises or turtles. The young men and boys assist in making, paddling and steering canoes. The women in a body go for shells, shell-fish, fruits and bulbs, in which they are assisted by the girls; whilst the elderly people keep at home, making baskets, nets, bows and arrows, attending the sick, &c. Between 2 and 3 P. M. the foragers return with their spoils, these are as far as possible equally divided amongst all.

Prior to the advent of the Europeans, the Andamanese lived entirely upon the products of the waters and of the jungles, never tilling the soil, and storing up but little for a future day's supply. One of the first questions usually asked respecting these people is, "Are not they cannibals?" They repudiate the idea, and in return wish to know "why when food abounds should they devour human beings," a feast which they believe would cause their death.

They eat nothing raw, not even fruit. In cooking meat, they either throw it on the embers, turning it over when the under side appears to be done, or else cooking the flesh of the tortoise, turtle, or pork in unbaked earthen chatties.* Their appetites are large, for they appeared to be easily able to consume 6 lb of fish at one sitting, and after a very short time had no objection to begin again. A large *Pinna* forms their plate, a *Nautilus* shell their drinking cup. They have no regular periods for their meals; when they are hungry they eat, no matter at what time, whilst it is an almost essential commencement to give them a good meal before starting for any excursion.

Their principal food at the first or north-sun period is honey, fruit, and turtles. In the rainy season, they do not wander about very much, owing to the difficulty of obtaining shelter, then the

* I have seen them cook a prawn by placing it inside the bowl of a pipe which they were smoking!

jack seeds last them for three months. In the early part of the middle season pigs are common, but when becoming scarce, fishing and turtle-catching takes their place. In the report for July, 1865, I observe it stated "they are only now aware that cucumbers, potatoes, and pumpkins are eatable, and they use tobacco, all which a short time ago, they used to fling away."

Pigs, towards the month of September, begin to rove about the jungles, finding their way to the coasts and creeks, and it is during this time, that many are killed. In the year 1865, they first began to use dogs for pig-hunting which they learnt from some run-away Burmese convicts, previously they had to lie in wait hours and sometimes days, even in the hopes of seeing one or two, now the dogs find them almost at once, they are consequently held in great esteem, and every dog they see they wish for. The Andamanese, however, have curious ideas respecting pork as food, and when they are able to choose, use it as follows. The children and weakly persons eat sucklings, the bachelors and spinsters use those of medium size, whilst adults prefer the stronger boar.

As they capture their principal supply of fish and turtle during the low tides, and do not dry or salt any, it follows that they have abundance at that time of the lunar month, whilst at the intervals they are comparatively destitute.* At the change of the monsoon (October) they generally shift their quarters to more healthy spots. One of their encampments which has been dwelt in for some time, is not a model of cleanliness, whilst innumerable fleas and other animals render going through it anything but a pleasing occupation. Beef they consider too coarse for food, neither as a rule will they eat birds. About January the *Dugong* shows itself in Port Mouat Bay, coming to feed upon a species of sea weed which is also relished by the turtles.

In January likewise honey becomes common and they bring down the honey-comb with great dexterity, neither smoking the bees nor being stung themselves. A wild shrub "Jenedah" exists in the jungles, and its juice appears to have an intoxicating effect upon the bees. The person who is to ascend the tree, takes a piece in his hand, and biting through the bark, the pungent juice exudes

* The turtle season with them ends about the month of April.

into his mouth, this is spat at the bees, which are said (for I did not personally witness it, though I was shown the shrub, and an Andamanese went through the process,) to become intoxicated, or else to fly away. Wax obtained from the honey-comb is much used for their bow strings, likewise for covering the fibre which attaches the heads to arrows, as well as for stopping leaks in their canoes.

One of the most necessary pieces of property to these people is a canoe, a moderately sized one being capable of accommodating about 20 persons, whilst it is used for the purpose of obtaining food for about 30. It is scooped out of a tree by men, who work with a species of adze. They take their turn at this employment, during which period they are supplied with food by the others. When completed, their canoe is of a very fragile construction, and rarely lasts above one year, for they are continually thinning its sides by scooping out and ornamenting its interior. In fact when made, no care is taken of it, and its sides are easily stoved in. It is ballasted by stones, and has a prow projecting about two feet, on which the fisherman stands. These prows become especially useful whilst fishing turtle and spearing skates and rays.

The bamboo pole which is employed for pushing along the canoe, has a sharp moveable iron head at its one extremity, and to this is attached a long line. When the bamboo is thrown, and the spear becomes imbedded in the prey, it slips away from the bamboo, but being attached to the line, the animal is securely held by the fisherman. Their eyes, whilst slowly and silently moving about, are as sharp as hawks : the spear is mostly thrown with a good aim, and should the fish be large, some of those in the boat dive down, attacking the victim with knives and spears, whilst others endeavour to pass a line over the game. Should the water be too deep to pole about, one or two men or boys paddle the boat, as silently as possible, the man on the prow directing them which way and how fast to go, by signs made with his hands or feet, but not a word is spoken.

For their small or hand nets, very similar to a common landing net without the handle, they use a fibre as a thread, which they work at very neatly, employing their fingers as a mesh, and by

changing from the little to the index digit, they gradually augment its size as desired. When turtles are scarce, a large net is used, this is attached to stakes which encircle the whole of a reef to which these animals resort for food. Just before the tide commences to ebb, they fix the net, thus penning in all the turtles which may be there at the time, but which fight most desperately to break out of the enclosure; the Andamanese now use spears to secure them, and as a rule but few escape.

Their bows and arrows are mostly employed for shooting fish in shallow water, the upper two-thirds of the arrow is a light reed, the lower portion a heavier sort of wood armed with a piece of iron, or a sharp nail. Major Haughton in 1862 observed, in the Proceedings of this Journal, upon the flint arrow heads having been employed by them for shooting fish, and some such fashioned pieces of flint are still found amongst their heaps; but the aborigines do not recollect when these articles were so employed, they, however, remember their being in use for shaving and tattooing.

It will not be amiss in this place to take a slight retrospect concerning the origin of the " Homes," which are now kept up for the Andamanese. When these islands were taken re-possession of in 1857, doubtless the aborigines caused great trouble. Convicts, who ran away, were killed, as were also others who were felling the jungles, for these savages move about so stealthily, that scarcely a bough moves, nor does a leaf rustle. They are excellent trackers and thus ascertain the number of persons that have passed, and judge pretty accurately how long it is since they passed.

They helped themselves to the implements employed in felling timber, they used convicts' leg irons for spears, and nails for arrowheads, they had no scruple as to how they were obtained. Consequently their vicinity led to insecurity, to the prevention of works of clearance being carried on, to garden cultivation being extended, to the prevention of bamboos being obtained from the jungles, to the plundering of the fishing-stakes, and the settlement suffered accordingly.

At first hostages were taken from the tribes, some of whom were kept in irons in the convict settlement, a plan which does not ap-

pear to have caused unqualified satisfaction, whilst on faults being committed the lash was freely resorted to. On June 12th, 1864, three convicts at the North outpost, in a most unprovoked manner were ruthlessly murdered, so all hospitality and friendship was withdrawn, they were prohibited entering our stations, unless unarmed, and if seen plundering, the sentries were directed to fire upon them with slugs. In those times the aborigines distrusted us as much as the convicts feared them, and on coming into the settlement, they kept their arrows in their bows ready for immediate recourse to, and whilst some parleyed, others stood watching a few yards off, ready for a fight, or to secure a retreat.

Owing to the hostility of the Andamanese, convicts had to be restricted within bounds, no one could venture into the jungles. About the middle of June, some of the aborigines visited Haddo, food was given them, and they were asked to bring some bamboos, which they promised to do, but only brought a few dead ones. They were evidently merely spies, for after a day or two, they entered Aberdeen and Phœnix bay stations in force, plundered the gardens and carried off some convicts' clothes. However, towards the end of the month, they appeared inclined to become more friendly, they brought in some escaped convicts, whom, however, they first plundered, besides removing every bit of iron from the boat in which they had escaped. On being taxed with this, they at first pleaded surprise, then said, they would make restitution, and brought a canoe as an exchange for the mischief they had done to the Government boat. At first this was not quite understood and the canoe was sent back, but they returned it the next day, explaining that they desired it to be kept as a reimbursement for the injury they had done to the Government boat, so no longer considered the canoe theirs.

A Home was kept up on Ross island, but those who had been engaged in plunder, were not permitted to land there, thus M o r i a r t y, who had assisted in killing the Tollidar (already referred to), was considered ineligible, which caused very great dissatisfaction. The women and children made rafts of bamboos and so floated to Ross, or even swam over on the support of a single bamboo. In October this year, they again plundered Aberdeen and its neighbourhood,

and it began to be very evident that unless some hold were obtained over the tribes, all works must cease. It was proposed to issue a general amnesty, especially as the chiefs were becoming very irate, and without their controlling power the tribes were found to be most hostile, plundering everything they could lay their hands on. In the month of December this amnesty was carried into effect, and then to a great extent the chiefs began to keep the people in order. However the aborigines continued to be very suspicious, imagining that in their being treated at Ross, they were sorts of hostages, and used frequently to request to be taken over to the mainland, as they were not permitted to swim over, because they took more property with them, than they had a legal claim to. One day the whole forty asked to go, and finding no objection was raised, they returned after a few days on a bamboo raft and became quiet.

In May, 1866, the Home was removed to the mainland as the junglees' presence was not considered any longer to be desirable. In November of this year, the murderer Jim was released, the tribes promising in future to try and stop murders, and to discontinue the use of war bows and arrows. Some of them were taken to see an execution, and it was explained to them, that that was the manner we treated murderers, and they at once expressed their intention of refraining from murders in future. In 1868-69, they apprehended fourteen convicts from the Punjáb and two Burmans who had escaped, and also brought in some shipwrecked mariners.

My first interview with the people was on January 9th, 1870, at North bay where I went with Mr. Homfray to look for them and induce their coming fishing. The sea was rather high, and it was not until 11 A. M. that we discovered one of their canoes, containing two of these people. We pulled for the place, they, however, had landed and made their boat fast. It will be difficult to forget their appearance. There sat on the stumps of trees two lads, destitute of clothing. They had some ornaments made of fibre around their heads, and strings like garters below the right knee. As for inducing them to move, they simply declined, observing they were waiting for more of the tribe; however, they pointed out where the encampment was.

Leaving them, we went to their camp to try our persuasions on some of the others to accompany us to Viper. We found a number of females and children, all of whom appeared very glad at seeing "Myo-jolah." They were engaged as usual, in smoking short clay pipes, and eating, having taken some fish, prawns, and crabs. On being told that I wanted fish, they brought out all they had, and let me help myself. After a long talk, the females consented to go to Viper, for as Mr. Homfray had judiciously remarked, the boys would soon follow. It was finally arranged that they should go in our boat, and we were to take a canoe in tow, containing some more of the aborigines. Scarcely had we started before one of them seized my umbrella, and it was explained to me that she did not like the sun's rays, and proposed that "I should hold my umbrella over her head."

When we arrived at Viper, we found thirty more people had preceded us, and by evening we mustered nearly seventy. It was, however, too late to go out, so we passed the afternoon in feeding them, letting them fly a kite, with which they were highly delighted, in ascertaining the Andamanese names of fish, and information respecting the best fishing grounds.

The next morning eating commenced about 5 A. M., and by 6·30 we had 43 of them in the boats, and left for Phœnix bay and South point. Before starting, however, they ridiculed the idea of our getting fish, as it was not low tides whilst there was a strong wind and rough water. Still as my stay was limited, we persevered, and on arriving at Phœnix bay, had to commence proceedings by lighting large fires and distributing rice, plantains, poppaws, sugar-cane and tobacco, whilst they caught crabs, which they cooked on the embers. In fishing we did so badly that at their suggestion we crossed the point to South bay. As we went near the inhabited part of the station, they begged for what they saw, and collected little bits of iron. The tide being low and the water not so rough, they did better at this place; they shot one *Lethrinus rostratus*, Cuv. and Val., one *Teuthis vermiculata*, Kuhl. and v. Hass., and several *Glyphidodon sordidus*, Forsk. Besides these, the younger children captured many specimens of *Periophthalmus Koelreuteri*, Schn.

On the 11th, we left Viper for a fresh water creek with 20 of the people. On arriving at the landing place, we saw a storm rising, and the aborigines waved about their hands and arrows, to beat or flog away the evil spirit which was creating the disturbance; nevertheless they were unsuccessful, and it poured all day. We landed at one of their deserted encampments, but the fleas and other vermin were so plentiful, we had to retreat to our boats. Their huts were palm leaves, supported on sticks in the most primitive style. We took a few fish and bivalves up the creek, but the weather became so severe that we were compelled to return. The Andamanese asserted that a large fresh water lake exists in the island, but too far away for us to go to. As we were going back, the boat hook catching in a tree went overboard; instantly one of the Andamanese boys darted overboard and recovered it.

On the 13th we went across to the Andamanese Home, a long thatched shed, the head quarters of one of their tribes. On one side of the entrance was a large heap of the bones of tortoises, turtles, dugongs, and also a few shells, the refuse of their meals. Inside were people and dogs, the latter as regards feeding evidently considering all were on an equality, whoever could take the food first being the lawful owner. Here we again had to give them fruit and sugar-cane, which was equally divided under the inspection of their queen, a quiet looking venerable old woman. Having distributed pipes and tobacco, we at last induced them to start for a cruize through the jungle, in order to ascertain what fish there were in the fresh water streams, and what specimens of natural history we could collect.

The distance across country was five miles, but the road a mere jungle foot track. We told the aborigines to obtain fish, shells, reptiles and grasses, and they set to work to collect. We had not gone far, when those ahead called out to us to come on, and pointing to a tree asserted, they saw a snake between the bark and the stem. The fissure was scarcely noticeable, but having removed the dead bark, out came a snake (*Lycodon aulicus*) which we secured. They also obtained from the streams, specimens of *Gobius giuris*, H. B., *Ophiocephalus gachua*, H. B., *Haplochilus panchax*, H. B., and *Muræna maculata*, H. B., also some Crustacea, many land

shells,* some lizards,† and five species of wild grasses. About 6 P. M. we arrived at the Home at Progress creek where we left them. The next day was a repetition of the previous one only carried on on the opposite side of Port Mouat. On the 15th I had to return to Ross, but in the early morning, prior to our starting, the Andamanese brought in two tortoises, a turtle, and some fish shot and speared since 6 P. M. the previous evening.

From the 18th to the 20th, assisted by these people, I made an examination of some of the sea fisheries, and the mode how they take sea fish, a short description of which will perhaps give the best idea of how they work. On January 18th, it being low spring tide, we started from Port Mouat at 7 A. M. for MacPherson's straits and arrived at the encampment of the Rutland chief about 11 A. M. We found them close to the sea shore, where some fine trees overhung the rocks, on which they were lazily reclining. We passed the body of the only child of the chief tied up in a tree, its spirit being supposed to be powerful, the little one having died about a fortnight previously.

About 3 P. M. we embarked, taking with us seventeen of the aborigines in our boat, their ages varying from about nineteen to ten years. The females and younger children, with three hand nets remained in the stern of the boat: the bachelors with three bows and arrows and one spear in the forward part, and as usual the latter were constantly chaffing the former. One youngster took the rudder and we prepared to start for "Jolly boys" island, some two miles away. Scarcely was the anchor raised, when a lad in a canoe came with some fish, and likewise handed in a piece of dead coral, amongst the branches of which numerous beautiful little fish were to be seen alive, as well as some lovely little crabs. On suggesting that they might have got in there by accident or been put there for show; over the side of the boat dashed a young savage, who dived down and rose again to the surface with another piece of coral as large as his head, and in it were forty small but living fish.

* *Cyclophorus foliaceus* Chem., and *Spiraxis Haughtoni*, Bens., being the most common.

† *Tiaris subcristata*, Blyth, is the commonest tree-lizard; besides, several species of GECKOTIDÆ occur.

As we were again on the eve of starting, we heard a shout of *úchrah, úchrah* (fish, fish) when another canoe arrived, with some splendid specimens obtained by means of bows and arrows. At last we started, the Andamanese as usual carrying fire with them, and soliciting tobacco and pipes, their most constant word being *jay, jay*, (give, give). As a foretaste of what might be expected, provided they did well, we presented the chief with a looking-glass, some tobacco, and a box of fusees, whilst we also gave our fellow passengers another box of fusees, which, however, they had exhausted before we arrived at the termination of our short pull, as they were unable to resist the amusement of making fire without trouble to themselves.*

We passed shoals of fish, many being of the most brilliant hues. Now our fishing commenced, the females started off along the shore to fish in their manner, the bachelors with their bows and arrows and spears proceeded as far out upon the reef as they could, whilst the younger children stayed with us to collect shells and small fish.

As soon as we commenced wading into the sea, hundreds of fish darted about, either from under one piece of coral to another, or from sea-weed to sea-weed.

We first collected the little *Blennies* which are exceedingly active and disappear in holes under the coral, just as one is feeling sure of obtaining them, we, however, captured a sufficient number of specimens. Occasionally when feeling under a sea-weed or coral for a fish, a crab would lay hold of the hand of the investigator. At one yell rather louder than any which had preceded it, I went to the spot and saw the beautifully scarlet and striped *Pterois volitans* swimming off, whilst all the Andamanese refused having anything more to do with the "sea devil," as they term these fishes, on account of the severity of the wound produced by their spines. The water was very clear and shallow, and all this fish's elongated fins were expanded, it appeared in no particular hurry, but seemed to be quietly sailing away, as much as to challenge us to touch it. I threw a pocket handkerchief over it, and thus obtained it safely.

Many fishes, never previously seen by me, darted past us, and the little Andamanese began to warm to their work and took some larger fishes as *Serranus dispar*, Günther, *Scolopsis ciliatus*, Lacép., *Mugil*

macrochilus, Bleeker, *Teuthis vermiculata*, K. and v. H., *Glyphidodon sordidus*, Forsk., *Chœrops cyanodon*, Richardson, *Hemigymnus melanopterus*, Bl., *Callyodon viridescens*, Blkr. &c. Whilst thus engaged, we heard a loud shout out on the reef, and on looking, perceived a skate, *Rhynchobatus tuberculatus*, Cuv., nearly six feet long struggling with some of our fisherman. We found, however, that there were many small species which we could not capture, so the next day returned with a large sheet. On splashing the water, these fish retired amongst the branches of the coral. We then spread the sheet close to the coral, sinking it with stones and placing some sea-weed and sand upon it. As soon as all was quiet, the fish came from their place of security, got amongst our sea-weed when we lifted the sheet out of the water, and thus obtained them. The Andamanese are familiar with this mode of catching fish.

We continued collecting about an hour, during which period we obtained, without using anything but the boys' hands, many species of fish, about 60lb weight of shells and specimens of the so-called sea slugs, *Bêche de mer* (*Holothuria*) which abounds there. In about one and a half hours 31 large mullet, *Mugil macrochilus*, Blkr., averaging about 3lb. each, and upwards of 30 other large fishes as well as many small ones had rewarded the labours of our archers, and that without the loss of a single arrow. The succeeding day, the same parties killed 56 large mullets by bows and arrows within the space of two hours.

As soon as a shoal of fish, or even one large fish is viewed, all become at once on the alert, they dash about with the greatest activity, run over the sharp coral without caring for it, whilst their eyesight is most acute. They fire their arrows at objects in the water, which no European, unused to the work, could perceive. They appear to aim under the fish, and mostly hit it through the bowels, when struck, away darts the unfortunate victim carrying off the floating arrow, which, however, soon becomes entangled in the sea-weed or else the tired and wounded fish gives in, the arrow floats, the captive's life is nearly over. The smaller children have miniature bows and arrows, the latter being unarmed, but having its end sharpened; with these they practice upon small fishes, also on those which have been wounded by their elders. The usual

mode of killing captured fish is to bite through the vertebral column just behind the head, but some of the sea fishes they first exercise the younger children upon. The fish is thrown into the sea, and of course darts away, the boys and girls dash in after and recapture it. Sometimes they will do this, especially with the *Teuthididæ*, several successive times. To a stranger it at first appears very improbable that they will recapture it, but I never saw them lose one.

As we were preparing to leave, the Andamanese having asserted that they had obtained as much as they could carry and sufficient for food, one of the girls brought a specimen of the pretty yellow and white banded *Amphiprion percula*, Lacép., and on being told that it was good, observed she could get numbers more. She took us to a sea nettle, *Actinia*, which she detached from the coral rock, by inserting her hand behind the attachment of this polype, and on shaking it into the hand, two more of these little fishes came out. Subsequently this was repeated to twelve others, and all had two living fish inside them, except one which had three. They asserted that this was their usual abode. A few days previously, Captain Hamilton had observed to me that some little striped fish lived inside a polype at North bay. One day he dug one out, dragged it to the shore and captured three little fish from its interior, replacing them in the sea they appeared not to know what to do, swimming round and round as if looking for something. The living polype was now returned to the sea and they at once swam to it, following it as it was dragged back again through the water to its original locality. As I was going over to North bay fishing, he came with me to see if he could not find a specimen, unfortunately after discovering one and obtaining a fish from it, *Amphiprion bifasciatum*, Bl., he got stung by the polype, consequently I did not see it, but I have the fish. At Gopaulpore, I found living specimens of *Therapons* inside *Medusæ*, which the fishermen asserted to be common.

On returning towards our boat, a large number of esculent swallows were observed soaring about, some of them darting in, others coming out, of a low cave. We sent in some of the Andamanese to look for nests, and they brought us two old ones, observing the season was too late, whilst the convicts had cleared it a few months

previously. We obtained some specimens of the birds by standing at the entrance of the cave and knocking them down with our hands as they flew out. Further on, we came across a *Chiton* attached to a rock, and they drew attention to it as being a great dainty. But on being asked their opinion upon *Holothuriæ* and oysters as food, they expressed great disgust at the idea of eating them.

It was dark by the time we reached the boat, but some of the aborigines went before us, had lighted a fire and were cooking and eating fish. They divided their captures before we left the island, but there was a second division on reaching their encampment as the chief came on board our boat, and he claims everything. After he is satisfied, it is time for the rest to receive their shares. We gave the chief several presents, amongst which the spears for *Dugong* hunting appeared to be most acceptable, and concerning which all expressed unqualified satisfaction. He gave us a large turtle, some more varieties of fish, wished us "good night" in English, and we left this tribe, after having been three days with them. Their chief and his people appeared more inclined to work than either of the other two tribes, amongst whom we had previously been. Still in conclusion, it is but just to remark that all behaved well, whether hunting the jungles for snakes, and shells, or the streams, backwaters, estuaries, creeks, or the sea for fish, although it was plain that all except the Rutland islanders, considered it was a considerable trouble. One tribe in fact requested to know how soon I was going, as they were becoming tired of work, and hearing that if we did well that day, it would be the last; they seemed stimulated to renewed activity, and were rewarded by my taking my departure.

II.—*Notes on a trip to the Andamans,*—by V. Ball, Esq. (Abstract.)

The author read an interesting account of his visit to the Andaman home at Port Mouat, in company with Mr. Homfray and Dr. Curran, Asst. Surgeon of Viper island. In his observations, Mr. Ball supported the views expressed in the previous paper as regards the manners and customs, and the reputed cannibalism of these people. He met the aborigines busily at work about their domestic occupations. A woman was seen by Mr. Ball engaged in

chipping off flakes of glass from a bottle with a quartz pebble. It took some time till a suitable flake was obtained, for the purpose of shaving. He was also informed by Mr. Homfray, that the Andamanese still perfectly understand the manufacture of flint flakes, and drew the attention of the meeting to the great interest attached to the execution of this art, of which geological researches give daily proofs that it has been once in practice more or less almost throughout the whole world. The very simple form of huts does not appear to prevail throughout the islands, for Mr. Ball was informed by Capt. Duncan that on Little Andaman the houses were of a bee-hive shape, resembling those of the Nicobarese, only much larger and not elevated from the ground. In conclusion Mr. Ball quoted passages from Mr. Wallace's Malay Archipelago, in which the author says that the Nigritos inhabiting the Andaman islands "had in all probability an Asiatic rather than a Polynesian origin."

Besides the general account of his visit, Mr. Ball submitted "Notes on the Geology and the Ornithology near Port Blair" which, it is hoped, will be published in the Journal.

III.—*A short list of Andamanese Test words,*—by F. A. de Röepstorff, Esq., Extra Asst. Supdt., Port Blair.

The words noted in the present list are taken from the dialect spoken by the Andamanese tribe at Port Blair. They are very few, but the Andamanese are mostly kept very carefully away from all communication with Europeans, and it is not easy to procure even all the essential words, though some of those now submitted may assist a visitor to Port Blair.

For the words marked with an * I am indebted to Mr. Homfray, the protector of the Andamanese.

a. is pronounced as in the word bar.
e. " " " better.
i. " " " bill.

Arrow (for fish), rá-ta.
Arrow (for killing pigs), í-a-la-da.
bad, ja-bag-da.
belly, jo-dó-da.

black, wo-lu-bai-a-da.
boat, bá-já-da.
bow (to shoot with), kar-ma.
(to) burn, chápa in-olun-ga-kæ.
come, min-ni-katsh.
cry, te-gi-ké.
down, ka-ó-lé.
drink, willi-ké.
*(to) eat, mœ-kré.
eye, dál-da.
*father, ar-o-de-rœ.
*fish, úk-ra.
*fire, chápa.
food, mæk.
*(to) go, tól-pik.
go (Imperative), ón.
good, bæ-rin-ga-da.
hand, ko-ru-da.
head, tshæ-ta-da.
*here, læg-ja-da.
*I, dol-la.
I, angól.
iron, wó-lu.
little, ar-kit-ja-da.
large, i-ji-bæ-ri-ga-da.
*mother, ar-bæ-te-ræ.
mother, tsha-no-la.
nose, tsho-run-ga-da.
rain, jung-da.
rice, i-ăt.
run away, katsh-ké.
*(to) sleep, má-me-kæ.
*(to) swim, pot-ké.
sail, a-kan-gei (that is go about in a canoe).
silence, mi-lan-ga-ké.
scold, to-wo-ké.
stone, tæ-li-da.

swine, ro-go.
*there, ultsha-da.
tooth, toog-da.
turtle, jædi.
*turtle, ga-ri-da.
up, ka-la-ge-a-da.
(to) want, tár-tup-pu-ké.
water, I-na-da.
white, ta-la-óg-da.
woman, a-pèl.
*you, un-go-la.
you, an-gōl.

The President, in inviting discussion on the three last papers read, pointed out that there are great many differences between several of the same terms noted in Mr. Röepstorff's list, and that published by Col. Tickell in the Society's Journal for 1864. If all the transliterations be correct, they certainly would indicate, he thought, considerable differences between the various dialects.

Mr. Ball observed that from the short account that was read, it would appear that Dr. Day is inclined to consider the Andamanese as a mongrel race, which is certainly in opposition to all the observations made by other naturalists, and seems inconsistent with the facts.

Dr. Stoliczka said that the statement made in Dr. Day's paper does not necessarily imply a generalisation of the term mixed race. Dr. Day stated to him that some of the people with smooth hair uncommonly resemble Madrasese. Dr. Mouat relates an instance of a Punjábí having been married to an Andamanese woman, and from other facts recorded there would seem little doubt that an intermixture of the races has, as elsewhere, occasionally taken place.

IV.—*Notes on Archæological Remains at Sháh kí Dherí, and the site of the ancient city of Taxila,—by* J. G. Delmerick, Esq.

The President said that the object of Mr. Delmerick's paper was to identify the site of the ancient city of Taxila with the present place of Sháh kí Dherí. The photograph which accompanied the

paper, shewed a number of well finished heads, chiefly of Buddha, artistically grouped. Some of the heads looked, indeed, as if of Greek origin rather than Indian. Mr. Delmerick had also kindly offered to send to the Society several of the heads themselves, which would be laid before the meeting in due course.

V.—*Archæological Notes*,—by A. C. L. Carlleyle, Esq.

Mr. Blochmann said—

Mr. Carlleyle, Curator of the Riddell Museum, Agra, has, on several previous occasions, favoured the Society with most costly photographs, tracings and rubbings of inscriptions and coins, &c. His presentations, if published, would indeed fill volumes. He sent lately through Mr. E. C. Bayley, several photographs of Bactrian and Buddhists coins, as also a large collection of well executed rubbings, regarding which Mr. Bayley observes—

'The rubbings are very interesting; they are several new ones among them, as a new Apollodotus, &c.'

Among the photographs lately sent by Mr. Carlleyle, there are a few Muhammadan coins which deserve notice.

1. A coin of Sher Sháh, with the Hindí legend *Srí Sher Sháh.*

2. A rupee of Jahángír—

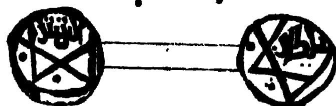
Obverse: نورالدین محمد جهانگیر

Reverse: لا اله الا الله محمد رسول الله

3. A coin by 'Álamsháh, struck at Dihli (*Hazrat i Dihlí*) in A. H. 853.

4. A coin of *Iltitmish*, or, as he is generally called in school-books, '*Altamsh.*'

Obverse: التتمش.—*Reverse:* سلطان



Name and title stand in double triangles.

The legend is التتمش, although the two ت have only two dots, for want of room; but the two *shoshahs* of the *t* are clearly visible between the *lám* and *mím*.

The two *t's* are moreover, distinct on Raziyah's coin, published by Mr. E. Thomas (*Pat'hán coins*, p. 19.)

Regarding the name *Iltitmish*, Mr. E. Thomas has an interesting note in the Journal of our Society for 1867, p. 37.

Iltitmish was born during an eclipse of the moon. Muhammadan historians in relating this circumstance, use, as if designedly, the obsolete *girift i máh*, instead of the common Arabic term *khusúf*, 'an eclipse of the moon,' and they appear to look upon *Iltitmish* as the Turkish equivalent for the Persian *girift i máh*. Perhaps Mr. Thomas' forthcoming edition of the Coins of the Pát'hán Kings will set this matter at rest.

As the name of this king occurs in poems, the metre helps us to a certain extent; for the passages in which *Iltitmish* is mentioned, require invariably three long syllables, *i. e.*, a word of the *wazn* of مفعولن *maf'úlun*; and we would have to choose between *Iltitmish* (التتمش), *I'litmish* (ايلتمش), and *Iltímish* (التيمش), no other pronunciation suiting the metre.

VI.—*Notes on some Javanese Algæ*,—*by* Dr. G. v. Martens, in Stuttgard,—*communicated by* S. Kurz, Esq.

[Received 30th April, Read 1st June, 1870.]

Dr. v. Martens has had the kindness to examine my Javanese and other Algæ,* of which he communicated to me the names and descriptions in his letter, dated 26th March, 1870. I now take the pleasure of placing the interesting results (with his permission) before the Society.

The Algæ noted in this communication were chiefly† collected by myself in the province Buitenzorg in Western Java, at a time when I paid comparatively little attention to this class of plants, and, therefore, the number of species is only very small in comparision with what has become already known from those regions, so

* There are numerous Andamanese and several Bengal Algæ, which I retain for a future opportunity. Prof. v. Martens is now examining the remainder of my Bengal and Burmese Algæ, and it seems, therefore, preferable to submit the results of these examinations in a separate paper. In doing so, unnecessary repetitions will be avoided, and at the same time a better phytogeographical sketch can be given of the respective countries, than if treated separately.

† With a single exception which refers to a species obtained at Singapore.

prolific in interesting cryptogams. In spite of that, several new species and even a new and well marked genus are the results, clearly indicating, how much still remains to be done in Indian Phycology. Zollingers' and E. v. Martens' collections of Algæ in the Indian Archipelago are far the richest as yet made in those countries, but in looking over the following short list, it can easily be observed that a good number of species, although not new to science, still are very interesting in a phyto-geographical point of view, as they were never before found by former botanists in those localities.

40.* *Calothrix maxima*, Martens; fluitans, 6 pollicaris et ultra, chalybea vel fuscescens, filis sine vagina 1/120 ad 1/100 lin. crassis, distincte articulatis; articulis diametro triplo ad quadruplum brevioribus, linea tenerrima dimidiatis; vaginis fuscis, 1/100 ad 1/75 lin. crassis.

Hab. Javae, frequens in flumine Tjiliwong prope Buitenzorg.

48. *Oscillaria antliaria*, Martens; ad saxa trachytica in flumine Tjiliwong pr. Buitenzorg,—frequens.

55. *Tolypothrix implexa* Martens; chalybeo-aeruginea, cæspitosa, cæspitulis ad 3 lin. altis; filis granulosis dense intricatis, parce ramosis; articulis diametro (1/450 lin. cum vagina) aequalibus, plerumque obsoletis; vaginis arctis.—Inter muscos ad ripam fluminis Tjiliwong prop. Buitenzorg,—frequens.

123. *Nitella sp. nov.? N. nidificæ* affinis; in fossis ad viam publicam ad Megamendong, c. 4600 ped.

313. *Scytonema tomentosum*, Kg., ad terram argyllosam inundatam prope Bogor tempore pluviali frequentissime.

315. *Hydrocoleum majus*, Martens; caespite pollicari ex chalybeo viridi, vaginis mollibus amplioribus pellucidis, filis inclusis nunc simplicibus ad 1/100 lin. crassis, nunc binis v. ternis, 1/300 ad 1/180 lin. crassis, saepe tumescentibus et flexuosis, tenuiter transverse striatis, virescentibus v. violascentibus, articulis diametro (1/90 ad 1/75 lin. cum vagina) brevioribus.—Ad terram argillosam et fluitans in aquis stagnantibus oryzetorum circa Buitenzorg.

* This and the following numbers refer to my collections of cryptogams (Kurz).

317b. *Spirogyra decimina*, Link; in fossis ad viam supra montem Megamendong pr. Tugu, c. 4600 ped. s. m.

318. *Phormidium inundatum*, Kg.; in aquis currentibus oryzetorum ad terram argillosam.

331. *Psichohormium fuscescens*, Kg.; in aquis oryzetorum pr. Buitenzorg natans.

335. *Cladophora sordida*, Kg.; in oryzetis ad Campong (vicum) Borong tang pr. Buitenzorg.

337. *Spirogyra majuscula*, Kg.; in oryzetis valli Tjiliwong pr. Buitenzorg, 830 ped. s. m.

338. *Spirogyra adnata*, Link; ad saxa declivia fluminis Tjiliwong pr. Buitenzorg.

370. *Lyngbya majuscula*, Harvey; in fossis oryzetorum circa Macara, pr. Buitenzorg, c. 1000 ped. s. m.

370b. *Lyngbya fluviatilis*, Martens, (Tange der Preuss. Exped. Ost. Asien, 19, t. iii. f. 5); ad saxa in rivulo Tjiberrem pr. Macara, ad Buitenzorg, c. 1000 ped. s. m.

524. *Nostoc papillosum*, Kurz; olivaceo-viride, explanatum, conglomeratum, senectute cavum, papillosum, umbonatum, filis internis dense implicatis, curvatis, articulis ellipticis, violaceis, 1/700 lin. crassis.—In monte Salak inter muscos juxta rivulum quoddam prop. Bodjong frequens, c. 3000 ped s. m.

Kurzia, Martens, nov. gen. Fila articulata, longitudinaliter connata, tubulum ramosum spinosum confervoideum formantia; spermatia globosa, minuta, fusca, in superficio sparsa.

672. *K. crenacanthoidea*, Martens; filis pollicaribus, valde intricatis, pallide viridibus, 1/30 ad 1/20 lin. crassis, flexuosis, ramis divaricatis, subsecundis, articulis filorum connatorum in diametro (1/200 lin.) aequalibus, v. duplo ad quadruplum longioribus; spinis alternantibus, plerumque binatis vel ternatis, pellucidis, tri-articulatis, sursum curvatis, acutiusculis, 1/20 lin. longis, basi 1/80 lin. crassis.—Inter Tjiboddas et Tjiburrum, in cavis montis Panggerango,* c. 4500 ped. s. m.

* It forms in the excavations along the path, going up the Pongerongo, green dense strata, covering especially the interior portions of these cavities, and receiving no other supply of water except what percolates through the earth. [S. KURZ].

A very remarkable Alga, very much resembling *Crenacantha orientalis*, Kützing, a species which has as yet only been found in a well in Hebron, Palestine. It differs, however, by the not jointed corticate stem and branches, only the fine prickles are jointed as in *Centroceras*, and are visible already with the aid of a common lens.

700. *Leptothrix lamellosa*, Kg. = *Oscillatoria labyrinthiformis*, Ag.—In the hot waters of the Tjikundal on the Gedé, at about 7000 feet elevation. It was already discovered by Vandolli in the time of Linné, in the hot water springs of Abano near Padua.

1207. *Phycoseris reticulata*, Kg.; Singapore; (very frequent in the Indian ocean and in the Red Sea).

VII.—*Contributions towards Vernacular Lexicography*, No. 1.—*By* Pratápachandra Ghosha, B. A. (Abstract.)

Lexicography as a science is quite unknown in the literature of Bengal. Dictionaries, in the true sense of the term, are not to be found in Bengali. The few that pass under that ostensible name, partake more of the nature of Vocabularies than of Dictionaries. They appear to have been compiled without any reference to the etymology or orthography of vernacular words. And as long as a real boundary line of the language is not marked, such works cannot be anything else than Sanscrita Dictionaries in Bengali characters. Some compilers have, however, augmented the size of their work by interpolating all the modifications and distortions of Sanscrita words to which corrupt pronunciation of the illiterate, and erroneous spelling of the negligent, have given rise.

In this, the first of a series of papers, it is attempted to lay the foundation on a sound principle, for a better and complete Dictionary of the Bengali language. Etymology of several vernacular words and their present application, as distinguished from that of the original Sanscrita words, from which they evidently have been derived, form the subject of this paper. The Bengali language derives more than nineteen-twentieth of the bulk of its words from the Sanscrita, and in many instances the original Sanscrita form has been so fully preserved, that the words of the two languages are, in

every respect, excepting the slight modifications of the case-affixes, identical. Almost all the words derived from the Sanscrita, have retained their orthography in writing, but in common conversation some of them are so far modified, that at first sight they defy identification. Hence arises that difference in the written and spoken language of the country, offering serious difficulties to foreigners in acquiring fluency of speech in the Bengali. In Romanising Bengali words, the same discrepancy has been observed, and it becomes almost impossible to the uninitiated to put in Roman characters a conversation conducted between two natives of the country. The vowels are so indistinctly pronounced, and the different *S's* and *N's* confounded and interchanged, that in transcribing them, the ear always misleads the pen. These peculiarities of pronunciation, not being observed in writing, have given rise to a serious question, whether such corrupt forms are to be considered as distinct words or not.

Excepting the case-terminals and certain very awkwardly distorted words which have to be traced to the Prákṛita and the Gáthá for an explanation of the mode of their formation, almost all Bengali corruptions from the Sanscrita are not permanent types. Such, however, as পীরিত, মরম, পিয়ারী, corruptions of the Sanscrita প্রীতি, মর্ম, and প্রেয়সী are permanent modifications, and though they are now and then rejected by the pedantic as vulgar, they are to be seen in many authors. The word পিয়ারী, however, has been so extensively used both in literary compositions and as a proper name, that the most strict defender of the purity of the language finds it difficult to eliminate it. Supporters of the converse theory, however, would retain such forms as, কম্ম, ধম্ম and মম্ম; they are used in common conversation even by the learned, though never in writing.

For the sake of euphony many Sanscrita words have been corrupted. Several such corruptions have been traced in this paper, and the rules of the substitution, elimination or interpolation of letters in Bengali and Prákṛita have been given, and lists of words so derived have also been added. The paper concludes with a list of Bengali words derived from the Sanscrita either direct or through the Prákṛita. The Prákṛita forms have been placed side by side for comparison.

VIII.—*Notes on Arabic and Persian Inscriptions in the District of Húglí,—by* H. Blochmann, Esq., M. A., *Calcutta Madrasah.* (Abstract).

Mr. Blochmann said—

I have collected fourteen Arabic and four Persian inscriptions from Tribení, Panduah, Sátgáṉw, and Dínánát'h. The Arabic inscriptions are all in large *Ṭughrá* characters with the letters much interwoven, which renders the reading extremely difficult, and is very likely the reason why those inscriptions, though so near our metropolis, have never been collected. Another source of difficulty is this, that the greater part of the inscriptions does not belong to the places where they now lie. Thus the tomb of Khán Muhammad Zafar Khán at Tribení contains two inscriptions imbedded in the side of the sarcophagus referring to the building of a Madrasah, and the second inscription (published by Mr. D. Money in J. A. S. B. Vol. XVI, p. 397) which only forms the concluding portion of the sentence, is put first. The public buildings in Sátgáṉw and Tribení decayed in the course of time, and vanished altogether, but pious hands have rescued their inscriptions and stored them up round about the hallowed spots of Zafar Khán's tomb, and Fakhruddín's enclosure, or even fixed them into the tomb walls at the time of repairs, as if these spots were the museums of inscriptions of the Húglí District.

Seven of the Arabic inscriptions collected by me add to our scanty knowledge of Bengal History and Geography. The earliest (Tribení) inscription gives the year A. H. 698, or 1298 A. D.; the latest (of Sátgáṉw) A. H. 936, or 1530 A. D.

The following geographical names occur on the inscriptions—

1. *The town of Husainábád the Great.*

This is evidently Husainábád in the Murshidábád district. A village of the same name lies between Sátgáṉw and Tribení, not far from the spots where tradition still points to the site of the royal horse and camel stables; but its foundation, according to the tradition, belongs to the times of Husain Sháh the Good.

2. *The town of Sirhaṭ.*

This is the *Sarhat* of our maps in Birbhúm. It was the birth-place of Ruknuddín Rukn Khán, who, according to the inscriptions at Tribeṇí commanded a good portion of Western Bengal in 698 A. H. His name and time coincide with those of the Ruknuddín (Kai Káús), mentioned by Mr. E. Thomas and Bábú Rájendra Lála Mitra (*vide* Journal Asiatic Society of Bengal, 1867, *p.* 40.)

3. *The District of Sájlá Mankhḥád* (عرصهٔ ساجلا منكهباد).
4. *The T'hánah of Láoblá* (لاوبلا).

This name occurs on the Tribeṇí Inscription of 698 A. H.; but the Sátgáṇw inscription of 861 mentions the *town* of Láoblá.

5. *The District and town of Hádígaṛ* (هاديگر)
6. *The town of Simlábád* (سملاباد).
7. *The T'hánah of Mihrbak* (مهربك).

I should be glad if any member could assist me in identifying the last *five* names.

Tribeṇí itself is called by Muhammadans *Tripání*, or *Tripaní-Sháhpúr*, or *Fírúzábád*. They refer the latter name to a Dilhí Fírúz; but it is more natural to refer it to the Fírúzsháh of Bengal, whose name occurs in the Tribeṇí inscription of 713, and on Mr. Thomas' coins (Journal A. S. B., 1867, *p.* 45).

Two inscriptions of the year 698 A. H. mention no king, but only the names of Khán Muhammad Zafar Khán, and Ruknuddín Rukn Khán, the latter of whom gets high sounding titles, as *Ulugh Majlisulmajális, Majlis i Ikhtiyár*, &c.

The inscription from Zafar Khán's Madrasah, completed on the 1st Muharram 713, gives the name of *Shamsuddín Abul Muzaffar Fírúz Sháh Sultán.*

The name of this king is not given in the Histories of Bengal. Mr. E. Thomas was the first that assigned him his proper place. His coins refer chiefly to the years 715 to 722 A. H.; one perhaps belongs to 702. The Tribeṇí inscription gives 713, at which time he must have been firmly established.

The next (Sátgáṇw) inscription gives the date 861, and mentions the king *Náçiruddín Abul Muzaffar Husain Sháh*, and a Bengal grandee *Tarbiyat Khán.*

Our imperfect lists of Bengal kings call this king *Náçir Sháh;* but 'Husain Sháh (I.)' would be the proper name.

The next inscription mentions *Barbak Sháh, son of* Mahmúd Sháh, *the Sultán,* as in Marsden II., p. 573. The year is expressed by

في تاريخ الحادي من المحرم و ستين و ثمانمائة

the meaning of which, on account of the *wáw* before *sittín,* is not quite clear; and if it be *Muharram* 861, it would be at variance with the preceding inscription.

The next inscription from *Sátgánw* mentions *Jaláluddín Abul Muzaffar Fath Sháh Sultán, son of Mahmúd Sháh Sultán,* and the date, 4*th Muharram* 892. *Vide* Marsden II, 574.

Thus Fath Sháh would be Barbak's brother. But their father *Mahmúd Sháh Sultán* has not yet received a place among the kings of Bengal.

The last inscription of importance gives the name of *Sultán Nuçrat Sháh, son of Husain Sháh Sultán,* and the year A. H. 936, or 1529-30, A. D.

Whether he was called 'Naçíb Sháh' (*Abulfazl, Firishtah*) or not, there is no doubt that on inscriptions he is called 'Nuçrat Sháh' (نصرة شاه).

I take this opportunity to state that the Bahrám Saqqá, mentioned in my last paper on 'Historical places in the District of Húglí,' to judge from the inscriptions on his shrine in Bardwán, lately received by me, turns out to be the poet of the same name, whose biography will be found in the Second Book of the Áín.

Mr. Ball said, I would venture to suggest to Mr. Blochmann the neighbourhood of Rájmahál as well worthy his attention, should he determine to extend the limits of his investigations regarding the ruins and monuments which mark the early progress of the Muhammadans in Bengal.

Between Rájmahál and Colgong (K'halgáṇw) there are a number of ruined masjids, palaces, and forts. The latter, but more especially the one at Tilagurhi (Talyágaḍhí) being so situated as to command the passes through the hills.

Considerable quantities of cut stone, trap, granite, and gneiss have been used in the buildings.

On the small granite islands in the Ganges at Colgong, there are wedge marks shewing where huge monoliths have been split off from the mass of rock. In some cases, the operations were not successful, the stone having broken off short. On one of the islands there is a remarkable *Durga* carved on the rock *in situ.* At Putturgutta there are cave temples cut in the sandstones on the sides of the hill. When recently visiting these localities I saw four traces of inscriptions.

A short discussion followed as to the historical importance of the Rájmahál District, and the desirability of securing some of the valuable inscriptions which lie about unprotected at Sátgáṇw and other places.

The following paper was received :—

IX.—*On the Normal Rainfall of Bengal,*—by H. F. Blanford, Esq., F. G. S.

The reading of this paper was postponed for the next Meeting.

LIBRARY.

The following additions have been made to the Library since the last meeting—

Presentations.

*** Names of Donors in Capitals.

Proceedings of the Royal Society, No. 117.—THE ROYAL SOCIETY OF LONDON.

Bulletin de La Société de Géographie, Mars, 1870.—THE GEOGRAPHICAL SOCIETY OF PARIS.

Anthropological Review, No. 29.—THE ANTHROPOLOGICAL SOCIETY.

From Calcutta to London, by the Suez Canal.—THE REV. C. H. DALL.

Materials for a Monograph of the *Lepetidæ*, by C. H. Dall.—THE AUTHOR.

Ueber den Löss, von Eduard Suess.—DR. F. STOLICZKA.

Description d'une espéce nouvelle du genre *Argiope* du terrain Oligogéne inferieur du Nord de l' Allemagne, par J. Bosquet.—THE SAME.

Notice sur deux nouveaux Brachiopodes, par J. Bosquet. :—THE SAME.

Mémoire sur les Fossiles de Montreuil Bellay, par M. Hérbert :—THE SAME.

Beiträge zur Paläontologie der Jura-und Kreide—Formation im Nordwestlichen Deutschland von Dr. U. Schloenbach :—THE SAME.

Die Fossile Fauna der Silurischen Diluvial-Geschiebe von Sadewitz in Nieder-Schlesion. Eine Palæontologische Monographie, von Dr. F. Rœmer :—THE SAME.

Bághbaṭṭa Ashtánga Hridaya :—COL. G. B. MALLESON.

Professional Papers on Indian Engineering, April 1870 :—THE EDITOR.

Rahasya Sandarbha, No. 58 :—THE EDITOR.

Selections from the Records of Government, No. LXXV :—THE GOVERNMENT OF INDIA.

Narrative of the Course of Legislation by the Council of the Governor-General during the official year 1868-69 :—THE SAME.

Report on the Result of the Administration of the Salt Department, during 1868-69 :—THE GOVERNMENT OF BENGAL.

Selections from the Records of Government, Vol. III, No. 11 :—THE GOVERNMENT OF N. W. PROVINCES.

Exchange.

Nature, Nos. 25 and 26.

Athenæum, February and March, 1870.

Purchase.

Gould's Birds of Asia, part 22 :—Ibn-El-Athiri chronicon, Vol. IV. :—Revue des Deux Mondes 1 and 15 Mars :—Revue Archéologique, Mars, 1870 :—Revue et Magasin de Zoologie, No. 2, 1870 : Comptes Rendus, 8-11 :—Reise der Œsterreichischen Fregatte Novara, *Crustaceen.*

On the Relation of the Uṛiyá to the other Modern Aryan Languages,—by JOHN BEAMES, ESQ., B. C. S., *Balasore.*

[Received 6th April, 1870; read 4th May, 1870.]

A book has recently been published by Bábú Kántichandra Bhaṭṭáchāryya, a Pandit in the Government School at Balasore, under the title উড়িয়া স্বতন্ত্র ভাষা নহে "Uṛiyá not an independent language." This little work, though profoundly destitute of philological arguments, has created some stir among the natives of the province, who are somewhat disgusted at finding their native language treated as a mere corruption of Bengali. The local excitement on the subject, has led me to look into the question more closely than I had before, though in the course of reading for my "Comparative Grammar of the Modern Aryan Languages" I had come upon many peculiarities, both of phonetics and inflection, which had caused me long ago to make up my mind as to the right of the Uṛiyá to be considered a language *per se*. It may not be uninteresting to others to see an attempt made to analyze the structure of this little known form of speech; and at the risk of anticipating statements which would give to my grammar an air of greater novelty, I venture to put down a very brief outline of my views.

At whatever period in the history of the world the Aryan race entered Orissa, it must be admitted as highly probable that those who did so, formed the vanguard of the immigration. Improbable as it seems to one who looks on the effeminate and apathetic Uṛiyá of to-day, his ancestors must necessarily have been the pioneers of their race. In folk-wanderings, however, it is not the hardiest or most enterprizing race that moves first. On the contrary, when the ancestral home got too full of people to be able to support them all, and it became evident that some must go elsewhere, the difficulty would be to determine who should be the victims; and that difficulty would naturally be solved by kicking out the weakest first. They being pressed on from behind by continually fresh-issuing swarms from the parent hive, would in the end be driven further and further, till they reached the extreme limits of the habitable area at their disposal. This is the history of the Celts in Europe and the Uṛiyas in India. Having reached the head of the Bay of

Bengal, and being driven on constantly by Bengalis in their rear, finding the eastern regions closed to them by fierce non-Aryan tribes, it must have been to them a great relief to find on the south that long narrow strip between the Hills and the Sea which they reached across the forests of Midnapore and Hijli. This land they named the "outlying strip" (उत out, कल a strip*), or उत्कल देश. If the above suppositions be admitted, as I think they will readily be, it follows that the Uṛiyas could not have, as our Pandit assumes, borrowed their language from Bengali, because at the time they passed through Bengal, it was uninhabited, at least by Aryans; and the Bengalis were behind them, and did not come into Bengal till the Uṛiyas had left it. It is certain that as early as the 8th century, Hemachandra knew the *Utkalí* or *Oḍra* to be a separate form of Pṛakrit from the *Gaurí* or Bengali; and we need not at present seek a higher antiquity than this to establish an independent language. I am not, however, desirous of laying much stress on the historical side of the argument; that derived from the internal structure of the language seems to me conclusive.

In the first place to mention is to refute the argument that because in any modern printed work in Uṛiya sixty words out of a hundred are identical with Bengali, therefore they are not two, but one language. The same argument might with equal justice be applied to Maráthí.

That unnecessary parade of learning which goes among us by the name of "pedantry," has never struck the Indian mind as offensive or objectionable. On the contrary, the more long and learned words an author can cram into his work, the greater his reputation. In the search for these *sesquipedalia verba*, the seven nations of the Aryans have divided into two camps. In the one camp are to be found those who draw from Sanskrit, in the other those who have recourse to Arabic and Persian. The former are the Bengali, Uṛiya, and Maráthí; the latter the Hindi,†

* In classical Sanskrit we have only कला fem., but the masculine must also have been in use, as is shewn by numerous forms in the modern languages.

† I use the word Hindi advisedly, to signify that great language which, when borrowing largely from Arabic is called also Urdu, which some misguided people would wish to regard as a separate language.

Panjábi and Sindhi. Gujarati hovers between the two. It is possible to construct a long sentence, nay to write a book even, in Hindi, Persian, Arabic, and Turkish, in which sixty per cent. of the words used should be identical, because borrowed from Arabic; yet no one would conclude that these languages were connected. Similarly a book may be written in Bengali, Uṛiya, and Marathí, with the same proportion of identical words, and yet no argument could be thence derived for or against the connection of the languages.

The fact is that the Sanskrit words so largely employed by pandits in Bengal and Orissa, are not living words at all, they are dead, dead ages ago, and only now galvanized into the semblance of life; they form no part of the real working stock of words of the language. When they died ages ago, their sons inherited their place, and now their grandsons or great-grandsons hold it. In plain English, such Sanskrit words as were used by the Uṛiyas and Bengalis twenty-five centuries ago, have since then undergone the usual fate of words, and have been corrupted, abraded, and distorted, till they often bear no resemblance at all to the original word. And it is these corrupted, or as they are called *Tadbhava* words, that are the real living words of the language, the words that have worn into their present shape by long use in the mouths of the people. These words our fastidious writers reject, and when by going back to the Sanskrit for their words, they have composed a work to their taste, lo! they say Uṛiya and Bengali are one language; for proof, read such and such works. I would suggest rather, let them take a *chása* of Dacca and a *chása* of Gumsar, and see how much they understand of one another's talk.

In the grammatical structure of the Uṛiya language, we see traces of a very well defined Pṛakrit with features peculiar to itself. I begin with the verb as the simplest part of the language, (in this case at least).

There is first a present participle in *u*, as *chalu*, and a past participle in *i*, as *chali;* by means of these two a whole string of compound tenses are formed, thus—

I.	chalu	achhi	I am going
		thili	I was going
		hebi	I shall be going

II.	chali	achhi	I have gone
		thili	I had gone
		hebi	I shall have gone.

Then there is a series of three simple tenses (which ought perhaps to have been put first).

I. mu dekhi, *etc.*, I see
II. mu dekhili, I saw
III. mu dekhibi, I shall see.

The habit of using the plural in speaking respectfully to others, and of one self, has become so inveterate that the original proper singular of the verb and pronoun has been rejected from the high-polite style, and only holds its own among the common people, that is to say, the three millions of uneducated folk, who know no better than to speak their mother-tongue as they find it. In literary compositions, the plural *amhe, tumhe, semáne* with the plural verbs as *karuṇ, kara, karanti*, are used for both singular and plural, and in the grammars hitherto published, these forms are given in the text, and the unfortunate singular *karaiṇ, karu, karai* is banished to a note as "the inferior style!!". It is to be hoped that this truly præ-scientific treatment of the language will not be perpetuated in any future grammar.

The infinitive ends in *iba*, as *ásibá* to come, and is declined like a noun, just as the Hindi, and all other infinitives in the seven languages.

It has also a good strong form for the conditional. Thus—

Singular.	Plural.
Mu dekhi thánti	Amhe dekhi thántu
Tu dekhi thántu	Tumhe dekhi thantă
Se dekhi thántá	Semáne dekhi thante

In which, as in the Bengali *dekhitam*, we recognize the verb स्था *sthá*, but in the Uṛiya in a more perfect form than in the Bengali.

As another instance of the superiority of Uriya in the matter of preservation of the Prakrit and Sanskrit forms, I will put side by side the simple present of the substantive verb.

	Uriya.	*Bengali.*
Sing.	Mu achhaïn (*vulgo* achhi)	Mui áchhi
	Tu achhă	Tui áchhis
	Se achhaï	Se áchhe
Pl.	Amhe achhun	Ámi áchhi
	Tumhe achhă	Tumi áchhă
	Semáne achhanti	Tini áchhen

I suppose the Bengali pandits will deny my right to put down the first three forms *áchi*, *áchhis* and *áchhe* as real singulars, but my time for fighting them on that point has not yet come; any how, it is easy to see that in *achhaï*, *achhanti*, respectively we have pure Prakrit and Sanskrit forms in perfect preservation, whereas the Bengali has in its *áchhe* and *áchhen* gone many steps further down the ladder of corruption. In the Uriya forms achhaïn, and achhun we have better representatives of the quasi-Sanskrit forms acchámi and achhámah (for the classical *asmi* and *asmah*) than in the Bengali, which has only an ill-defined feebly terminated *achhi* for both singular and plural. In fact Bengali is singularly behind all the other six languages in its verbal terminations, which are not sufficiently definite or clearly marked, and rejoice in short indistinct vowels.

The Uriya verb in its general scheme approaches more closely to the Hindi, and holds a respectable place among its sister languages, not being too luxuriant like the Gujarati, nor too scanty like the Panjabi; and with a regular system of terminations, in which respect it is superior to the Marathi and Sindhi, in neither of which do any two tenses exactly harmonize, and in which the troublesome and unnecessary element of gender is introduced. As might be expected from the comparative peace that Orissa has enjoyed, and its long immunity from foreign aggression, the verb has preserved tones and traces of much greater antiquity than any other language of the group.

This air of antiquity which is so striking and pleasing a feature of the language, is well illustrated by the pronouns which may be compared to advantage with any of the others. Thus *amhe* is pure Prakrit, and retains the *h*, which has been dropped in Bengali. The Hindi here inverts the position of the *h*, and drops the final *e*.

Marathi, though retaining the *h*, lengthens the first vowel and changes the *e* to *i*, giving *ámhí*. Gujarati *ame*, or *hame*, is intermediate between Uriya and Hindi ; Panjabi and Sindhi *asín* though older, inasmuch as they retain the स of Skr. *asmah*, yet are less perfect, inasmuch as they drop the *m*.

Without going through the whole line of pronouns which would take too much space, I would here merely call attention to the facts that of all these forms, Uriya is not more closely allied to Bengali than to any of the other sister languages ; that the Uriya form is quite as genuine a descendant of the Sanskrit as any of them ; and lastly that the Uriya form having retained elements which the Bengali has lost, it is absurd to say that the former is derived from the latter. I merely give the second person as an illustration without comment.

	n.	g.	acc.		n.	g.	
Uriya Sing.	tu,	tor,	tote, etc.	Pl.	tumhe,	tumhár,	&c.
Hindi	tu,	tera,	tujh, etc.	Pl.	tum,	tumhárá,	&c.
Bengali	tui,	tor,	toke	Pl.	tumi,	tomár,	&c.
Marathi	túṇ,	tujhá,	tuj	Pl.	tuhmi,	tumchá,	&c.
Panjabi	túṇ,	terá,	tainúṇ,	Pl.	tusiṇ,	tusáḍhá,	&c.
Sindhi	túṇ,	tuṇhujo,	tokhe,	Pl.	taváiṇ,*	tahvanjo,	&c.
Gujarati	tun,	taro,	tune,	Pl.	tame,	tamáro,	&c.

In the noun, we observe the usual transition from the synthetical to the analytical formation. Here too there is considerable approximation to Bengali in some respects, though it will be seen that there is equally close approximation to the other languages.

The accusative preposition *ku* is nearer to Hindi *ko* than to Bengali *ke* ; and the likeness is strengthened by the fact that, as in Hindi, *ku* does duty for the dative as well.

The instrumental exists only with a periphrastic form *dwárá*, and the system of *prayogas* or constructions has not here received that full and perplexing elaboration that constitutes the difficulty of Hindi, and in a still greater degree of Marathi.

The ablative is formed by the postposition *thánu* (sthán ru) or simply *ru* "from," which is evidently connected with the sign of

* Also tahiṇ, avhiṇ, áṇiṇ &c. The want of a good literary standard of spelling is felt very strongly in all the seven languages, notably so in Sindhi.

the locative *thâre* or *re* "in;" and has nothing at all resembling it in the other tongues, unless we adduce the Bengali *re* of the dative, which, however, is probably a relic of the Sanskrit genitive *asya*, like the Marathi dative in *ás*, and dates from the Prakrit which habitually confuses the two cases. I think it probable that in the Uriya *ru*, we have the Sanskrit ablative *át*, which becomes in Prakrit *ádo*, and *ádu*. It appears to have been cerebralized into *aḍu*, whence *ru*. The locative *re* may be a corruption of the Prakrit termination सिं, where the *s* has been changed to *r* as in Bengali, but this I do not feel sure about.

The genitive ends in *ar* after a consonant, or *r* after a vowel, and closely corresponds to the Bengali in this, its only truly inflectional case.

The plural is formed by the added syllable *mán*, or *máne*, (*i. e.* "number"), just as in Hindi *log* or in Bengali *gaṇ*. Here the genitive comes out in greater clearness as *mánangkăr*, where the syllable *ang* (*a* with anuswára originally, though now written मानङ्कर) is the sign of the neuter of a Prakrit form मानं; this shews us that the sign of the genitive is properly *kar*. And this leads to a curious and unsuspected connection. In an article on the Bhojpuri dialect of Hindi,* I shewed that there was reason to believe that the *ka* of the Hindi genitive was corrupted from a form कर, or perhaps क्र, that the loss of the र gave us the Hindi form, while on the other hand, the rejection of the क gave us the Marwari रा, र, रौ, and the Panjabi दा, दे, दौ, both the *k* and the *r* are found in the Bhojpuri pronominal genitive करा, as in *ikará okerá* (iská, uská). Now here again we have from the other side of India, a genitive plural in *kar*, the *k* of which is rejected in the singular, but retained in the plural. We must thus again dissociate Uriya from its neighbour Bengali, and tighten the links which connect it with its western congeners, leaving Bengali, till further research shall have been made, as the solitary instance of an inflectional genitive.

There is thus on the whole very little in the declension of the noun in common between the Uriya and its fellows. It may be interesting to give here in one view all the seven declensions. It will

* Journal R. A. S. vol. III, p. 483.

then be seen that Uriya is a perfectly self-contained and independent member of the family.

	Hindi.	Panjabi.	Sindhi.	Gujaráti.	Marathí.	Uríya.	Bengali.
Genitive,	ká, ke kí,	dá, de. di, diáṇ,	jo, je ja ji, je, ji já, júṇ jyúṇ, jini etc.	no, ní, núṇ	chá, chi, cheṇ. che, chyá, chíṇ.	{ ar r	{ er r
Dative,	ko	nuṇ	kho	[mate, arthe sáru]	{ -á, -ás -álá.	ku	-ere -re
Accusative,	ko	nuṇ	kho	ne	—	ku	-ke
Instrumental,	ne	nai	-á	-e	{ nen, -en, síṇ.	[dwárá]	-to
Ablative,	se, par	-te	{ kháṇ, to, auṇ, etc.	thí, thakí	hûn -ûn	{ tháru, ru	háito
Locative,	meṇ	vich	meṇ.	máṇ	-án -îṇ	tháre, re }	to

All the genitives, except Uriya and Bengali, are declined to agree with the governed noun; in Sindhi, the number of forms arises from a desire to enable the governing noun to agree with each case and gender of the governed; which is not thought necessary in the other languages.

If we pass on to the question of the phonetics of the language, we find some more curious particulars.

Geographical position seems to have some influence here. While Panjabi and Sindhi in the extreme west exhibit a tendency to employ always short vowels and closed syllables, Bengali in the extreme east prefers long vowels and open syllables, while Hindi in the centre holds a middle place, neither too prone to lengthen nor to shorten; and this is a standard by which to measure the other languages. Marathi again, which lies due south of Hindi, and is also somewhat central, being neither very far to the west, nor to the east, exhibits the same centrality as Hindi with which it generally agrees in the quantity of its vowels. Gujarati is more prone to shorten than Marathi, and less so than Sindhi. Thus we get in fact a regular gradation from west to east. The more westerly a language is in situation, the greater its tendency to short vowels and closed syllables, and as you go further east by

degrees, the long vowel and the open syllable become more and more prominent, till they reach their extreme developement in Bengali. Now in this scheme, Uriya holds exactly the place we should expect. Lying in the same parallel of longitude as Behar, its phonetic system precisely corresponds with that of eastern Hindi, and is consequently less prone to long vowels than Bengali. North and south have no influence in this matter, it is only west and east that we have to consider, and Orissa though south is also entirely west of the Bengali area. A few examples may be given:

Skr. भद्र good, becomes in all the languages भल्ल; as in H. P. M. and S. भला G. भलो, लो, लु but B. भाल. Here U. has भल as in H. and the rest.

Skr. बुभुक्षु hungry. Here as compensation for the loss of the ष, the क is aspirated to ख, and the preceding vowel lengthened into *ú* in all the languages except P. and S., which exhibit भुखा and बुख्या respectively. Uriya here has a guna form भोक, concerning which I shall speak below.

Skr. दंश to sting. All the other languages retain the short vowel, though they cerebralize the initial द, Bengali alone lengthens it to डांस. Uriya in दंशन retains the vowel in its proper quantity.

Skr. सप्त, Prakr. सत्तो; as compensation for rejecting one त, the other languages lengthen the vowel and have सात P. and S. stick to the short vowel and have सत.

So in तम्बू a tent, the derivation of which is obscure, Bengali alone has ताम्बू. Uriya agrees with the others in retaining the short vowel.

तीच्ण bitter, becomes in all तीखा except P. S. and G. which have तिक्खा तिखो and तिखु respectively.

In another point, Uriya is in a different camp from Bengali. The three southern languages Gujarati, Marathi and Uriya delight in guna vowels, in places where the other languages use the pure vowels.

Again the Uriya agrees with Marathi in preferring a dental to a cerebral, whereas the western languages and peculiarly Sindhi cerebralize the Sanskrit dental unnecessarily. This peculiarity rests upon very deep bases and would take a long time to work out. Thus U. G. and M. have थण्डा cold, where the other

languages have ठण्ढा, and Bengali as usual a ठाण्ढा (the derivation is not certain, but it is probably from an old part. pass. of स्थल to be firm, meaning congealed as ice or contracted by cold as the human body).

I have done here little more than point out the line of argument which should, in my opinion, be followed in cases of this sort. I wish particularly to urge that no researches into any one of the seven languages can be considered complete or satisfactory which do not embrace the whole seven, because they are so closely connected, and mutually shed such light on each other, that the reasons for their developement and for the forms they exhibit in modern times, depend upon laws, whose operation is universal, cannot be traced in one member only of the group.

Much more may, of course, be said on this subject; in fact a tolerably large book might be written on it. Unfortunately such a book could only be written by a resident of the province, as no respectable grammar or dictionary of the language has yet been published; and as there are few persons in Orissa who are competent to take up the enquiry and work it out fully, we cannot expect to see a good answer to Bábu Kanti Chandra's book yet awhile.

Bábu Rájendralála Mitra offered the following remarks on Mr. Beames' "Notes on the relation of the Uriyá to the other modern Aryan languages."

I happened to be present at a meeting of the Cuttack Debating Club, in December, 1868, when a paper was read on Patriotism. In the discussion which followed, I was asked to take a part, and in the course of my remarks on the injury which false patriotism or an insensate love for every thing that is national, causes to real progress, I pointed out the injury which was being inflicted on the Uriyá race by their attachment to a provincial patois, which they wished to exalt into a distinct language. The view I took of the question was new to the people, and very warm discussion has ever since been kept up in the clubs, newspapers and the official correspondence of the province, and the little brochure which forms the subject of Mr. Beames' paper and the paper itself, are amongst its

most prominent results. Party feeling now runs high, and I am told that more than one libel case has been instituted in connexion with the subject. The main question being purely philological, it is not remarkable that so distinguished a labourer in that field of science as Mr. Beames, should come forward to take a part in its discussion. His paper is highly interesting, and I am delighted to hear of a comparative grammar of the Indian vernaculars from his able pen. I must say, however, that he has done an injustice to the author of his text in describing the little work as "profoundly destitute of philological arguments." No doubt Paṇḍit Kántichandra is not very familiar with the modern European works on philology, and his mode of treating his subject will be found to differ from the course followed in similar cases by European authors, but bearing in mind the language (Bengali) in which he has written the book, and the people for whom he has designed it, I must say that he has displayed considerable tact and talent. My testimony will, perhaps, not be of much worth, I wish, therefore, to give a brief resumé of his work, in order that the meeting may be in a position to judge for itself. The first three chapters of the work treat of the origin of the different vernaculars now current in India, and the causes which have lead to their formation. The author then defines the natural boundary of Bengal and Orissa, and in the next chapter enters upon the main subject of his essay, the similitude between the Bengali and the Uriyá languages. This he does by quoting passages of Uriyá from diverse sources, and comparing then with Bengali. Uriyá vocables form the subject of his next chapter, and he there shews that the ordinary elements of Bengali speech are all current in the Province of Orissa, either intact or under some modification or other. In the eighth chapter is brought under review the grammatical apparatus of Uriyá, its declensions, gender, number, case and conjugation. Chapters next fellow on songs, proper names, manners and customs, dictionaries and alphabets, which go a great way to shew that the bulk of the Uriyá race does not differ from the Bengali; and the work is brought to a conclusion with some very pertinent remarks on the injustice and impropriety of cutting off the Uriyás from the Bengali by artificial barriers under the name of education.

One great mistake which vitiates the whole course of the Paṇḍit's arguments, is the assumption that the Calcutta vernacular of this century is the purest form of Bengali, and every thing that differs from it, is the result of corruption. Mr. B e a m e s makes a similar mistake by instituting his comparison with the Bengali of today, overlooking altogether that the separation between the Uriyás and the Bengalis must have taken place many centuries ago, and that to arrive at a correct conclusion as to the origin of the Uriyá language and its relation to Bengali, we should take up the two languages as they existed at the time of their separation and not as they exist now. Any how, I must say that there is a great deal in the Paṇḍit's book which deserves careful examination, and it would have been of some advantage had Mr. B e a m e s' reply noticed them in detail, instead of dismissing the whole work with a single disparaging remark. It would require more time than I can command at this meeting, to review the historical question as to the manner in which Orissa was peopled by the Aryans, but I shall, with your permission, Mr. Chairman, notice some of the salient points in the philological portion of Mr. B e a m e s' paper.

The first argument of the Paṇḍit is, that Uriyá compositions read so very like Bengali that, a few phonetic peculiarities excepted, they may be mistaken for Bengali, and are easily understood by the people of Bengal, ignorant of the Uriyá language; and such being the case it must, he argues, follow that the two languages are very intimately connected. To prove this, he has quoted passages from some Uriyá works and compared them with Bengali. Mr. B e a m e s accounts for their similitude by assuming that the bulk of the vocables in them, must be the result of pedantry, which make the Uriyá and the Bengali both resort largely to Sanskrit words and terms. He then goes somewhat out of his way to make out that pedantry, "so objectionable and offensive to Englishmen," is an "especial favourite of the Indian mind." Mr. B e a m e s, however, does not appear to be in a position to sit as an impartial judge in the matter. To decide the question of excessive pedantry in any particular set of books, the judge must be familiar with the literature of the language, both modern and ancient in which it occurs, otherwise what may appear pedantry to one, may be the peculiarity

of the language under notice. The *Rambler* alone cannot decide that the language in which it is written is Johnsonèse, and not English. In the same way calisthenic corsets and trichosarons for bodices and hair brushes may appear pedantic to a foreigner like me, but if they occur in the every-day language of fashionable English ladies, they cease to be so. The extracts given by the Pandit are taken from standard books in every-day use in the schools of Orissa, and to dismiss them by branding them as pedantic is, in my humble opinion, altogether to beg the question at issue. It is doubtless true that the predominance of any particular class of words in any piece of writing cannot decide the character of a language, but in the Uriyá over ninety per cent. of its vocables are Sanskrit, or corruptions of Sanskrit, and those corruptions have taken the same turn which corruptions in Bengali have done, and appear to be the results of the same laws of decay and regeneration which have produced the Bengali language.

The crucial test which Mr. Beames suggests is "to place together a *chásá* of Dacca and a *chásá* of Gumsur, and to see how much they understood of each other's talk." The result of this experiment would probably go against the Pandit. But the same experiment tried between a cockney and a farm labourer in Yorkshire would in the same way, I fancy, decide the fate of English in the two places. For my part, though a native of Bengal for the last four and twenty generations, I would be sorry to face a *chásá* from Comillah if the issue was to decide whether we could understand each other through the medium of our common language, the Bengali. The fact is, that local peculiarities of pronunciation do not constitute language, and therefore no notice should be taken of them in deciding questions of linguistic classification. My Lord Dundreary may "thee a thea thowpent thwiming on the buthom of the thea," but no philologist will be bold enough to spy in it a sister language of the English.

The first subject treated by Mr. Beames in regard to the grammar of the Uriyá language, is conjugation, but the comparison having been made with the Bengali as revised and recast by our indigenous writers within the last fifty years or so, the result is very different from what the Pandit has arrived at. The examples he

has quoted, though uncommon in modern Bengali, are not foreign to it; *chalu*, for instance, as a present participle and its compounds are not altogether unknown. But four centuries ago, G ó v i n d a D á s a, a Bengali poet, used it and its cognate forms almost to the exclusion of all others. Thus he says—

উঠিচলু সুন্দরী বিঘটল কাণ পিরিত।

Again: সখিগন দধি মন্থন করু তাঁহি।

In another place চৌদিগে-চান্দ হেরি রহি গেল.।

Of the second form *chali*, we have innumerable instances in old works, and even in the poetry of this century. *Dekhi* and *dekhili* are likewise common, and in the mouths of the common people the only forms in use. The Uriyá future *dekhibi* is in Bengali *dekhibe*, but the change is so slight that I do not think it would justify our attributing it to an independant parentage. In the conditional or subjunctive past *dekhi-thánti*, Mr. B e a m e s recognises a more perfect form than the Bengali *dekhitám*, but had he taken up the true Bengali conditional *dekhiyá thákitám*, he would have found that, with the exception of the nasal mark, the two are closely alike, and formed in either case with the help of the auxilliary verb, *sthá*. Of the twelve forms of the verb *achha, achchi, achhaï, achho, achhis, achhe, achhi, achhen*, &c., nine are Bengali and only three forms, *achhan, achhun* and *achhanti*, are new. Of these the last is by far the oldest. It shews a lingering of the Sanskrit affix *anti*. According to the rules of the Prakrit, Sanskrit compound consonants drop one of them and lengthen the preceding vowel, and accordingly, we find in Bengali the *ti* dropped and the *n* preceded by a long vowel as in *áchhen*=to Uriya *achhanti*. This elision of the *ti* is altogether modern. I think in old Bengali the affix occurs in its full form of *anti*, though I cannot just now recall to memory any instance in proof of it. The Pandit says he too has met with it, but he has given no example. Another marked peculiarity in Uriyá is, the separation of the base from the affix, as in *Karu achhi* and their compounds. In Bengali they are united according to the rules of Sandhi—*Kariáchhi;* but this is not a matter worthy of any remark, so I shall pass it by.

Of pronouns Mr. B e a m e s has given an elaborate analysis, taking his examples from the Bengali, Uriyá, Marhaṭṭá, Hindi, Punjábi, Sindhi and Guzerati; but the result is not satisfactory. He has

taken one example from each language, and that from books, and they are not sufficient for a fair comparison of living, spoken languages. What is wanted is a full survey of the various forms of the pronoun current in each province, and for that purpose a deeper knowledge of the languages, both ancient and modern, and in their colloquial and written forms, is required, than what I can pretend to possess. As regards the Bengali and the Uriyá, however, I may say that in *tu*, *tuï*, *tote*, *tumár*, &c., there is close analogy with Bengali. *Amhe* and *tumhe*, often pronounced *ambhe* and *tumbhe*, are no doubt peculiar; but the change has been brought on in Bengali since its separation from, or rather the birth of Uriyá, and its cause is the peculiar cockneyism of dropping the aspirate.

I shall now notice the declension of nouns. Mr. Beames' survey leads him to the conclusion that five out of the six cases are different. The very reverse, however, appears to me to be the fact. In the Sanskrit, the nominative is formed in most themes by the addition of an *s*. In a sister language, the Latin, the same rule obtains to a great extent, but in the derivatives of the Latin and the Sanskrit, we find the mark in some cases changed to *o*, and in others altogether omitted. In Italian and Spanish we have *o*, as *occhio* and *ojo* from the Latin *oculus*, but in the language of the Troubadours, in Provençal and in French the mark is omitted. In India, the Punjabi and the Marwari retain the *o*, but all the others drop it. The result is, that the nominative is alike both in the Uriyá and the Bengali.

The mark of the accusative singular in Latin and Sanskrit is *m*, but in most of the languages derived from them, it is dropped. So is the case both in Uriyá and Bengali. This rule is, however, not uniformly observed; and sometimes the place of the *m* is supplied by the syllable *ku*, in Uriyá, and *ke*, in Bengali, and to trace their origin, I must refer the meeting to my papers on the Gáthá and the Hindi dialects, where I have shown that to overcome the intricacies of the Sanskrit declension, it was usual with the scalds of ancient India to convert themes of various terminations to one form by affixing an expletive *k*, and to mark the elision of case-affixes, the usual rule was to add a *u*, which together make *ku*. In written Bengali, the *ku* changes into *ke*; but in the spoken language, in some districts, the *ku*

still retains its position, and we need not, therefore, take it to be a serious difficulty in the way of the affiliation of the Uriya dialect.

The dative is in most instances a counterpart of the accusative, and so is it in Uriyá and Bengali.

In Sutton's Uriyá grammar, the sign of the instrumental is *te*. It is the same in Bengali, and that case in the two languages may therefore be taken as identically the same. Mr. Beames, however, does not notice this mark, and gives *dvárá ;* but that form occurs more frequently in Bengali than *te*, and consequently the argument is not at all altered.

The ablative in ancient and spoken Bengali, is formed by the addition of *theke*, a compound of the verb *sthá*, with the expletive *k* already adverted to in connexion with the accusative. In Uriyá, it is formed with the same auxiliary verb and the mark of elision u = *tháru :* a later improvement has dropped the verb and retained only *ru*.

Mr. Beames admits the genitive to be alike in Uriyá and Bengali, so I need say nothing about the origin of the sign for that case.

The locative in Sanskrit is *e*, and in Uriyá and Bengali we have exactly the some form—*háte* from *háta* a hand. But there are other forms likewise current, thus we have *te* in *hátete* in Bengali, and *hátare* and *hátere* in Uriyá; but the last is not peculiar. In the *Chandi*, a Bengali book about three centuries old, we find the passage কোথাগো এমন বেসে কোথারে সজনি, and in the dialects of Sylhet and Cachar the *re* form is the only one in use. In the spoken language of Dacca, it likewise occurs very frequently.

The vocative is alike in both the languages; and so we have in seven out of eight cases, the two languages to correspond very closely, and in one only (the fifth) to differ but slightly.

The plural in Bengali is formed very differently under different circumstances; but mostly by the addition of a noun or adjective of multitude; such as, *gana*, *barga*, *chaya*, *sakala*, *sarba*, &c. &c. In Uriyá, there is more fixity in the rule, and the word *mána*, for weight or measure, is generally, though not uniformly, employed: the use of that word, however, is not unknown in Bengali, and the Pandit, whose book Mr. Beames has reviewed, has given several instances of it from old Bengali works. On the other hand, the Bengali plural mark *saba* is also frequently used in spoken Uriyá, and

such phrases *as gachha saba káṭi phelilá ;loka saba thilá*, are very common. These facts, I trust, will shew that the Uriyá, instead of being a "self-contained and independent member of the Aryan Indian vernaculars," is most closely and intimately connected with the Bengali, and the Paṇḍit has very good reasons to take it to be a daughter and not a sister of the vernacular of this province. The exact relationship may be reversed; but even a cursory glance at the old literatures of the two languages shew them to have been at one time one, and their differences to be due to later or modern growth.

Mr. Beames has devoted a good portion of his paper to the discussion of Uriyá phonetics. But they call for no remark. It has not been denied by the Paṇḍit, and no body will venture to gainsay, that Uriyá pronunciation is different from that of Bengal. The question is, are they such as to justify our taking the Uriyá to be an independant language? and I maintain that the phonetics of the two dialects do not suffice to solve it. In an excellent paper on the Bhojpuri dialect, Mr. Beames has shewn that, notwithstanding much graver differences in glossology and grammar—in declension and conjugation,—in pronouns and the degrees of comparison,—in adjectives and conjunctions—than what obtains in Uriyá and Bengali, the Bhojpuri is a dialect of the Hindi; and by a parity of reasoning, I expect he will admit the Uriyá, in a like manner, to be a daughter of the Bengali. Phonetic peculiarities such as he has noticed, and such as may be multiplied *ad infinitum*, do not constitute language, and therefore do not affect the question at issue in any way. I have no doubt that every member here present will bear me out when I say that such peculiarities exist in almost every county in England, but they do not suffice to divide the English language into a number of sister dialects. In the districts of Bengal, we have the same peculiarity in even a more marked degree. I well remember a remark of the late Rájá of Krishnanagar who once told me that his pronunciation must be more correct than mine, because his district was once the seat of government, and he had therefore every right to lay down the law in such cases. To put this more clearly, I beg to draw the attention of the meeting to a comparative table (Vide p. 215) which I once prepared to illustrate the differences of the Orissa, the Calcutta and the Dacca dialects.

The first column in it contains the first two paragraphs of an article in which the editor of the *Utkala Dípiká* condemned my theory about the Bengali origin of Uriyá; they contain just 142 words of which 137 are Bengali or derived from Bengali, and 5 are English. The translation of this in Bengali in the second column contains 144 words, of which none differs radically from the Uriyá, but fifty-six have some phonetic or grammatical peculiarity or other. In the third column is given a version of it in the spoken language of Dacca, prepared by a resident of that district, Bábu Rámakumár Bose, Deputy Magistrate of the 24-Purgunnahs. It contains 146 words, of which 47 are different from the Bengali. Thus it will be seen that the Dacca dialect differs nearly as much from the Bengali as the Uriyá does, in sound. If I had time to get translations of the Uriyá extract prepared in the spoken dialects of Comillah, Sylhet, Assam or Coch Behar, I could have easily shewn that they differ fully as much from the Bengali in their phonetics and grammar, as does the Uriyá. But I suppose they are not wanted. The table, as it stands, shews clearly enough the relation which the Uriyá bears to Bengali. No one who knows the language of the middle column, can read the other two without the conviction that they contain Bengali matter badly written. And such being the case, I cannot but repeat the assertion, that the Uriyá is more closely related to Bengali than the other vernaculars of India, and that the relationship most probably is that of mother and daughter and not of two sisters. And if this be admitted, it must follow that, as in Comillah, Assam, Sylhet, and Coch Behar, so in Orissa, education should be conducted in Bengali and not in Uriyá. As I have already said, every county in England and Scotland has its dialectic peculiarity, and yet education is not carried on through the medium of separate sets of books, prepared with special regard to the dialectic peculiarities of each county, but in one common English. In France almost every department, in the same way, has its peculiar dialect, but as yet there has not been a vernacularist hot-headed enough to suggest that each district should have a separate language; and the French of the Institute of France is the only recognised medium of education. The same circumstances obtain in Germany including Aus-

tria and Prussia, but nowhere is language divided on the ground of provincial peculiarities of pronunciation. In Hindustan Proper, there are at least a dozen kinds of Hindi differing from each other much more remarkably than Uriyá does from Bengali, and none knows this better than Mr. B e a m e s, who has so carefully studied them in all their different phases; but none has yet ventured to recommend that separate sets of school books should be got up in each of those different dialects. I see no reason, therefore, why a different policy should be adopted in Bengal. To the Uriyás this is a question of the most vital importance. According to the last census, they number only a little over two millions in the three districts of Balasore, Cuttack and Puri, and a million may be added for those who live in Ganjam, Sambhalpur and the Tributary Mahals. But on the other hand, we must deduct at least five lacs for foreigners, Muhammadans, Kyáns, Madrasis, Bengalis, and others, who want not and care not for the Uriyá language, so that we have only about 2½ millions for whom a distinct literature has to be created. The three districts under the Cuttack Commissioner yield to Government in the way of revenue under 17 lacs a year, and the zemindars at 37 per cent. get about 11 or 12 lacs. This sum is divided among 3881 persons, of whom only 26 get above ten thousand a year each, and of them 16 are Bengalis, mostly non-resident, who are not likely to offer any especial encouragement to the Uriyá language. The people are mostly agriculturists, and having very little trade, are generally very poor. How it is possible for such a small community, and under such circumstances to create a literature in their vernacular, and maintain it, I cannot conceive. Our vernacularists maintain that the vernaculars of India should be so improved as to suffice for a University Course for the B. A standard, if not for Honors. This would imply that each of them should include the whole course of Algebra and Geometry, and considerable portions of Astronomy, Chemistry, Natural Philosophy, and other sciences, besides translations from Newton's Principia, Grote's Greece, Gibbon's Roman Empire, Mill's Logic, and Abercrombie's Mental Philosophy. To suppose that such a thing is possible for a poor community of 2½ millions of Uriyás to accomplish, is to suppose an impossibility. To suppose that the whole or a majority of the people who speak the

one hundred and one vernaculars which, according to a little work on Philology by Mr. Beames, are now current in India, is so utopian or absurd, that I need not wait to notice it. It has been said that if the Uriyás themselves cannot get up a literature, the Government will help them. This is, however, very unlikely. Vast no doubt are the resources of the British Government in India, and vaster still is its earnestness to ameliorate the condition of the people under its sway, but I doubt very much of they will ever suffice to create a hundred and one literatures, and keep them *au courant* with those of Europe, even if such a thing as a "deficit" was never known to our financiers. Admitting, however, for the sake of argument, that Government would assist to a very large extent in furthering the education of the people, I would ask, would it be fair, would it be just, would it be politic, on its part to do so by multiplying languages? Had our Government been guided by that narrow, jesuitical, unholy and unchristian doctrine of *divide et impera,* it would perhaps have been expedient. But the liberal and noble-minded gentleman who represents Her Britannic Majesty in this country and his council, would scorn such a policy, and, I am satisfied, would not deliberately lend themselves to uphold it. The main object of language is to unite mankind by one common bond of speech, but to foster a hundred and one languages within the boundary of a single country like India, would not be to promote that all-important object, but to raise a tower of Babel to disunite and disperse the native races. It is not my intention, however, to advocate, at present, a single language for all India, but to plead for the Uriyás, and on the ground of unity of religion, race, and language, to take them amongst us, and to place at their disposal a fair share of all we possess, and may hereafter obtain. In Orissa they cannot publish a single book without adventitious aid, while in Bengal book-making has already become a profitable trade, and many have their manors placed behind their publishers' counters. We already publish more than five hundred books every year, and hope ere long to multiply the number manifold. As a note-worthy instance, I may mention that a few years ago I prepared a map of India in Bengali, and it brought me a profit within one year of over six thousand rupees. The same map was subsequently trans-

lated into Uriyá, but even the School Book Society could not venture to undertake it on their own account, and the Government at last had to advance, I think, some two or three thousand rupees to help the publication. The map, however, fell still-born from the press, and almost the whole edition is, I believe, now rotting in the godowns of its publisher. Let but Government introduce the Bengali language in the schools of Orissa, and the Uriyás, instead of seeking grants-in-aid from Government and private individuals for occasionally bringing out solitary new books, will have the whole of our Bengali publications at their disposal without any cost, and would be united with a race of thirty millions with which they have so many things in common.

Nor is the fusion of their language into ours at all impracticable. The experiment has already been tried and found to be completely successful. Some twenty years ago when the district of Midnapur was transferred from the Commissionership of Cuttack to that of Burdwan, the language of the courts there and of the people was Uriyá. The new Commissioner, for the sake of uniformity in all his districts or some other cause, suppressed Uriyá, and introduced the Bengali language, and nearly the whole of Midnapur is now become a Bengali speaking district, and men there often feel offended if they are called Uriyás. That similar measures in Balasore, Cuttack and Puri would effect a similar change, I have no reason to doubt.

I fear I have already occupied the time of the meeting a great deal too long, but I must crave your indulgence, Mr. Chairman, for one more remark. It has been said that if the Uriyá, like the other vernaculars, is not fit for a University Course, it would suffice for the elementary education of the people, and that is what is most urgently needed. To support this view, it has been pointed out by a learned gentleman, himself a university scholar, that elementary mass education is preferable to high class education, and inasmuch as the cost for every boy in a Government College would suffice for 40 boys in a vernacular school, we should prefer to have 40 to 1. The education in the Colleges, it is needless to say, is at least 40 times superior to that in the vernacular schools, but the latter nevertheless is said to be more desirable. The gentleman has evidently

no faith in the adage which aptly describes the merit of imperfect learning, or perhaps he patronises the homœopathic doctrine of "the greater the dilution the higher the potency." On that principle the paper of Mr. Beames (I say this without meaning any offence to that gentleman) would prove more effectual if it were torn into forty parts, and each handed to a separate member, than if the whole were understood by one man. But, however, that be, nothing could bring a greater misfortune upon the Uriyás than the enforced introduction of such a principle into their country. I yield to none in my earnestness for the elementary education of the poorer classes, but for the sake of truth, I must confess, even at the risk of laying myself open to much obloquy, that I have no faith whatever in mass education by itself, independent of higher education, as a means for the material, moral and intellectual amelioration of a nation, however much it may recommend itself by virtue of its apparent philanthropy: to me it has a smack of sickly sentimentalism which I cannot but condemn. Elementary mass education alone, without a higher education, can do but little good to any race of people. It implies a soupçon or suspicion of the three *Rs*, which is utterly worthless as an element of intellectual improvement. In Japan, we learn from Mr. Bernard, every grown up person, whether man or woman, is proficient in elementary reading and writing; but the Japanese are not, on that account, a whit better than the nations of Europe. In England mass education has extended much more than in India, but less so than in France or Prussia, but is England at all inferior on that account, morally, physically or intellectually, to those countries? One unhappy result of defective scraps of instruction miscalled education I shall advert to, it is that while the bulk of English thieves formerly were ignorant men, the relative proportion of educated to ignorant thieves has of late become as 68 to 32; that is, for every person who has become a thief from want of education, two have taken to the profession of larceny with the full benefit of the kind of education which is now become so fashionable a theme of praise. That it has in any way helped to raise England above other nations, I have every reason to doubt. But let us suppose, as a great Frenchman once did, that fate by some mortal stroke of cholera or plague was to carry off from Eng-

land fifty of her greatest mathematicians, fifty of her highest astronomers, fifty of her ablest chemists, fifty of her most distinguished geologists, fifty of her foremost physicists, fifty of her profoundest statesmen, fifty of her best writers, fifty of her wisest doctors, and fifty of her most proficient engineers, and to compensate the loss by a small modicum of reading, writing and cyphering in every man, woman and child, and that such a thing as a cross mark in the marriage register, of which we have now near thirty per cent. was never to be. The loss in such a case would not amount to five hundred persons,—mere "tulips and exotics" as they have been poetically described by the gentleman whom I have just alluded to, of no essential value to English society,—and the gain would be education in five millions of sturdy corn-growers. Would not England nevertheless be two centuries behind hand of France? England would still retain many of her third class astronomers, mathematicians and scientific men, but they would not suffice to uphold her prestige as an intellectual nation. In Orissa there is no man learned in the sciences, and the doctrine of mass education to the exclusion or supersession of higher education, would remove the chance of her ever getting one. It would chain her down to one dead level of intellectual poverty from which she will have no prospect of rising. It may convert her sons into indifferent copyists, or bad substitutes of Babbage's calculating machines; but not into intellectual, sturdy, self-reliant men. May the wisdom of our rulers avert from her so dire a calamity!

URIYÁ DIALECT.

Utkala Bháshára Unnatiprati Byágháta.

Utkala bháshára unnati pakshare bartamána gabarnamenṭa o dés'íya lokamáne yerúpa yatna karu-achhanti tánhira símá náhi. Alpakála madhyare utkalaré jemanta bidyálaya sthápana o utkala bháshárе pushtaka mudrita kárya heu-achhi ihá dekhi samastankara biswása huäi ye achire utkala bháshára unnati heba, tathácha amhemáne bodha karun ye abadhi prakrita upáyara anusaraṇa hoï náhin e bháshára unnati bipakshare eka gurutara pratibandhaka rahi-achhi.

Ethira parichaya debá purbara amhemáne keteka lokara bhrama saṅsodhana karibára uchita bibechaná karu-achchhun. Páṭhakamánanka smarana thiba ye gata di-

CALCUTTA DIALECT.

Utkala Bháshára Unnatiprati Byághúta.

Utkala bháshára unnati pakshe bartamána gabarnamenṭa o dés'íya lokerá yerúpa yatna karitechhen táhára símá náhi. Alpakála madhye utkale yemata bidyálaya sthápana o utkala bhásháya pustaka mudrita kárya haiáchhe ihá dekhiyá samasta (lokera) biswása hayitechhe ye achire utkala bháshára unnati haibe. Tathácha ámará bodha kari ye abadhi prakrita upáyera anusarana ná haya e bháshára unnatira pakshe eka gurutara pratibandhaka rahiáchhe.

Ihára parichaya debára purbe ámará kataka lokera bhrama sansódhana kará uchita bibechaná kariáchhi. Páṭhakadigera smarana thákibe ye gata dísembara máse

DACCA DIALECT.

Utkala Bására Unnatira prati Byágáta.

Utkala básárá unnatira pakke battamána gabaranmenṭa o des'íya lokerá jerúpa yatna karitechena táhára símá náhi. Alpakála madye utkale yemata bidyálaya thápan o utkala básáya pustaka mudrita kárya haiteche táhá dehiyá samasta lokera biswása haiteche je abilambe utkala bására unnati haibek. Tatácha ámará boda kari je jábat prakrita upáyara anusaran ná haya tábat ai bására unnatira pakke eka brihat pratibandaka tákibek.

Ihára parichaya debára pubbe ámará kataka lokera brama sansodana kará uchit bibechaná kariyáchi. Pátakdigera sarana ṭákibek ye gata disembara máse Kalikátá nibási subikkáta bábu Rájendralála Mi-

URIYA.

sambare másare Kalikátá báshí subikhyáta bábu Rájendralála Mitra e pradesaku ási kaṭaka dibeṭiñ klabare gaṭie baktritá kari-thile. Amhemáne táhánka Ingarájí baktritá karibára khamatáku prasañsá karithilun mátra. Se bidesíya, háṭhata goṭie baktritá karithile boli táhánka matámatara álochaná kari nathilun. Alpakála helá jánipárilun ye táhánka mataku aneka loka utkrisṭa jnána kari sethira anugámi hoiachhanti, sutarán ete bele táhánka matara bhrama darsáibá ábasyaka helá.

BENGALI.

Kalikátá báshi subikhyáta bábu Rájendralála Mitra e pradese asiyá kaṭaka dibaṭin klabe eka baktritá kariáchhilen, ámará táhánra Ingráji baktritá karibára khamatára prasañsá kariyá chhilám mátra. Se bidesíya haṭhát ekaṭá baktritá kariáchhila baliá táhára matámatera álochaná kariá chhilám ná. Alpakála haila jánite párilám ye tánhára matake aneka loka utkrishṭa jnána kariyá táhára anugámi haiáchhen, sutarán ebelá táhánra matera bhrama darsáibára abasyaka haila.

DACCA.

tra e dese ásiyá kaṭaka diveṭin klabe eka baktitá diyáchilen, amará kebala táhán Inreji baktritá karára kamatára prasañsá kariyáchilam. Se bidesí haṭát ekṭá baktitá kariyáchila ei janyá táhán matámatera bibechaná kariyá chilám ná. Alpakála haila jánite páiláma táhán matere aneka loke utkishṭa jnána kariyá táhán paschátgámi haichen, sutarán ebelá táhán matera brama dekánera ábasyaka haila.

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PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL

FOR JULY, 1870.

A Meeting of the Society was held on Wednesday, the 6th instant, at 9 o'clock P. M.

The Hon'ble J. B. Phear, President, in the chair.

The minutes of the last meeting were read and confirmed.

The receipt of the following presentations was announced—

1. From J. G. Delmerick Esq., a number of Buddhist heads and stone tablets with figures, from near Pasháwar.

The President drew attention to the prevalence of the Greek type in these heads. The figures appeared to be of clay, or a composition of clay and other ingredients, very lightly burnt, possibly only sun-burnt. They still retained their original sharpness of definition and were singularly well preserved. Obviously they had been attached to masonry, and no doubt formed part of a subject, worked out in high relief upon the frieze of some building. It was also remarkable that every one of them was unsymmetrical, *i. e.*, compressed or flattened either on the right side or on the left side. The purpose of this must have been to adapt them to being seen with the greater artistic effect from a particular point of view: and it indicated considerable advance in knowledge of the peculiar conditions necessary for the success of sculptural ornament.

A conversation ensued in which several members joined.

2. From the Government of India, Home Department—27 Photographs of Jain and Buddhist ruins in the Buldánah District, West

Barár, together with a copy of an inscription* found near Barsee Taklee.

3. From G. Latham Esq., C. E., a copy of 'India to England, a new Overland Route *via* Turkish Arabia.'

4. From Babu Gopinath Sen, a copy of a Table shewing the mean monthly and mean hourly variations of temperature as determined in the S. G. Office for 1855 to 1869.

5. From the Author, *Prabad Málá*, or the Wit and Wisdom of Bengali Ryots and Women, as shewn in their Proverbs and Proverbial Sayings, by Rev. J. Long.

6. From W. Oldham, Esq., LL.D., C. S., Gházípúr, an Urdú Translation of the Persian *Balwantnámah*, by Khairuddín Muhammad of Iláhábád.

Mr. Blochmann said—

The *Balwantnámah* by Khairuddín Muhammad of Iláhábád is a work of great value. It contains a history of the Názims and Rájahs of Benares, and is full of interesting details referring to the times and transactions of Warren Hastings. The author lived in the end of last century and has written several other Historical works, as the *Jaunpúrnámah*, or Chronicle of the town of Jaunpúr; the *Tazkiratul-' Ulamá*,† or biographical notices of modern Persian writers, chiefly of Audh; the *Kitáb i 'Alamshob*, or History from the time of Nádir Sháh to the death of Mírzá Najaf Khán; the *'Ibratnámah*, a voluminous history of the reign of Sháh 'Alam (II.) with a minute account of the doings of the notorious Ghulám Qádir; the *Gwáliárnámah*, or History of Fort Gwaliár; and several other works on law, rhetoric, and grammar.

His last work appears to have been the above mentioned *Tazkirat ul-' Ulamá*, which was written, like the *Balwantnámah*, at the suggestion of Abraham Welland, Judge of Jaunpúr, and dedicated to the Marquis of Wellesley. It contains additional matter for a History of Jaunpúr, and biographies of learned men chiefly of such as lived at Jaunpúr. He often praises the officers of the East India Company, because "they prefer a learned man of another religion

* The copy of the inscription is unfortunately so faulty as to convey no sense. THE EDITOR.

† Called in the Catalogue of Persian MSS. of the Society *Nuj'at ul'Ulamá*. THE EDITOR.

to a fool of their own." The books also contains a history of his life and a list of his works, from which it appears that the proper title of the *Balwantnámah* is *Tuhfah i Tázah*, a copy of which, I find, is in the Society's Library.

Khairuddín was born December, 1751. The *Tazkiratul 'Ulamá*, the latest of those of his works which are known to me, was written in A. H. 1216, or A. D. 1801.

His works deserve the attention of all who wish critically to study the times of the decline and fall of the Mughul empire and the early period of the E. I. Company.

The best thanks of the Society are due to Dr. W. Oldham for his valuable present.

The following gentlemen duly proposed and seconded at the last Meeting were balloted for and elected Ordinary Members—

E. Lethbridge, Esq., M. A.

A. B. Miller, Esq.

The following gentlemen are candidates for ballot at the August Meeting—

R. H. Wilson, Esq., C. S., and A. M. Broadly, Esq., C. S., proposed by W. W. Hunter, Esq., LL.D., C. S., seconded by the Hon'ble J. B. Phear.

The President on the part of the Council reported that a donation of Rupees one thousand had been received by the Society through the Government of Bengal from the Kundu family of Dacca, in aid of the annual grant made to the Society by the Government for the conservation and cataloguing of Sanscrit MSS. in India.

The President was sure that the Society in undertaking at the request of Government to dispose of the Rs. 1,000 according to the intention of the donors, would recognize the high motives, which had led these gentlemen to make so handsome a donation for public purposes. He trusted that this honorable example would not be lost, and that the Kundu family might be able to boast of a long list of imitators.

The President then proposed a vote of thanks to the donors, which was carried unanimously.

The President, in the capacity of Chairman of the Grote Portrait Fund Committee, then stated that he had been directed by the Committee to offer the Portrait of Mr. A. Grote to the Asiatic Society for its acceptance, upon condition that the picture be hung in the meeting-room of the Society. The likeness was unmistakeable. It almost brought back their old friend into their midst again. No place could be so fitting for the reception of the picture, as the walls of the room in which Mr. Grote had so long and so ably presided over their Councils.

Mr. Woodrow said :—" I have been asked to respond to the offer, probably because I am the oldest member of the Society present. It is more than twenty years ago that I was admitted a member of this Society, and so far as I can judge, no Calcutta member laboured throughout this time more steadily and continuously than did Mr. Grote for the good of the Society. Whether as member, office-bearer, or President, Mr. Grote's labours were unwearied. As President, his office was no sinecure. I have often wondered at the patience and courtesy he showed. Through his wide correspondence with friends in all parts of India, he was able to bring before every meeting some interesting information that he had himself obtained. The Asiatic Society will accept with sincere thanks the portrait of Mr. Grote, one of its most valued friends."

The proposal to accept the offer was carried with applause ; and the President pointed out a position in which the picture might advantageously be hung.

The President then exhibited a stone implement brought by Mr. W. Theobald from Prome.

Mr. Theobald said—

The Celt exhibited this evening, is remarkable for its size, which though not greater or even equal to many Indian Celts, is greater than that of any Celt which has hitherto been found in Birmah, with a single exception I shall presently advert to. Its general type is that of the Birmese Celt, the cutting edge being formed by grinding down one side only (as in a plane), whilst all Indian Celts are, I believe, formed by grinding or chipping away both surfaces so as to produce the ordinary form of a cutting edge (as in an

axe). It differs, however, from most Birmese celts which have come under my observation, in wanting the shoulders generally present, and in being made of a somewhat unusual material, a hard tough argillaceous sandstone, almost conglomeratic in structure. The Celt was picked up in the bed of a stream in my presence some 35 miles N. W. of Prome, and a very similar rock to that of which it is fashioned, is met with in the neighbourbood.

Its extreme length is $7\frac{3}{4}$ inches.
Width at top, 2 ,,
,, at bottom, $4\frac{1}{2}$,, (making a little allowance for rolled corners). Average thickness a trifle over 1 inch.

The form of this Celt, that is, the absence of shoulders, and its great size and weight, incline me to think that it was used in the hand and not fixed in any handle, as was almost certainly the case with the smaller ones.

The only other Birmese Celt approaching this in size was one purchased by me in the Prome District some years ago. It was of basalt, well smoothed, much longer and narrower than the present one, and with the cutting edge ground into a curved not a straight line. It was figured in the Plate of stone weapons from Birmah, Proceeding, A. S. July, 1869, Pl. III. fig. 1-1*a*, and is precisely similar in general proportions and type to a celt in the Christy collection, labelled "from Sumatra."

The following table will exhibit the contrast between the present Celt and the ordinary forms met with in Birmah The Celts themselves can be seen and studied in the Geological Museum, where they are now displayed in connexion with a fine series from India.

	Length.	*Top.*	*Bottom.*	*Weight.*	
				lb.	oz.
No. 1.	$7\frac{3}{4}$	2	$4\frac{1}{2}$	2	$11\frac{1}{4}$
2.	$3\frac{1}{2}$	$1\frac{5}{8}$	$2\frac{3}{4}$	0	$4\frac{3}{8}$
3.	$2\frac{3}{4}$	1	$2\frac{1}{2}$	0	$2\frac{7}{8}$
4.	$2\frac{1}{8}$	$\frac{7}{8}$	$1\frac{7}{8}$	0	$2\frac{3}{8}$
5.	$1\frac{1}{4}$	$\frac{7}{8}$	$1\frac{3}{4}$	0	$0\frac{5}{8}$
6.	4	$\frac{7}{8}$	$1\frac{3}{8}$	0	$2\frac{1}{2}$

No. 1. Large Celt. Exhibited.
2. Largest Celt of ordinary type (flat).
3. Smaller do. do. (do.).
4. Ordinary do. (high shouldered type).
5. Smallest do. (do.).
6. Chisel (figured A. S. Proceedings, July, 1869. Plate III. [Fig. 2-2*a*.)

The following letter was read—

From Mr. E. H. Steel to W. T. Blanford, Esq., dated Revenue Survey Camp, Suddia (Assam), April 11*th*, 1870.

'Knowing the interest you take in such matters, I send you a few notes of an earthquake felt here to-day. If it has been felt with violence in Calcutta and neighbourhood, which I doubt from the direction of the wave, it may be of interest to learn that it extended as far as here, especially as I have the exact time, taken by observation of the time on purpose. Our Longitude is nearly 96°, our Latitude 27° 52′; Calcutta Longitude is 88° 25′, Latitude 22° 33′. The difference of time will be about 32 minutes or less; this I have not subtracted from the times in the following record. I regret that I had no barometer the time, as we had a rare wind, easterly, the direction from which the wave came, and which rose suddenly after the shocks, died away soon after, and then was renewed for four hours again.

April, 11th. 10. 49 A. M., three moderate shocks rapidly succeeding one another, 2 sec. interval about.

10.51. Got up a 6 in. Theodolite. Lower level E. and W., upper N. and S. Direction of wave from E. to W., plainly evident. Continued wave motion, every 3 or 4 sec., until

10.59, when it became slighter and oscillation slower.

11.04. Still slighter and slower.

11.09. Scarcely perceptible and ceased.

Wind at first moderate and easterly, rose rapidly. Due east.

Weather fine, a few clouds. Sunny.

Thermo. 75°, at 11 A. M.

12 A. M., wind moderated a little, though it afterwards increased a good deal and died away at sunset.

There was no noticeable rise or fall in the water of the river Brahmapootra, 20 yards from my office. Men bathing in it, did not notice the shock, though all on land did.

Animals did not seem to notice it. Office clock placed nearly east and west, did not stop.'

In reference to Mr. Steel's letter, the President remarked that the writer seemed to speak very positively with regard to the direction of the vibration. It would be well to know in what mode Mr. Steele ascertained this, for it was certainly matter most difficult of direct observation. Probably a pool of water by the wave oscillation of its surface afforded the most obvious and distinct indication of the direction of the disturbance; but he (the President) could say, from his own experience, that even when the waves were large and well marked, it was not easy to form a very definite conclusion on the point by the aid of this phenomenon. He would be disposed to imagine that observations of rock masses, however extensive, would fail to give any certain result. Perhaps a view from a height upon a generally level mass of forest foliage would be more successful.

Mr. Westland mentioned that in one instance he had been easily able to detect the direction of the earthquake wave by the violent oscillations of a single tree; but the President pointed out that probably it was only one component of the tree's motion which would be thus observed, namely that at right angles to the line joining the spectator and the tree.

The following papers were read—

I.—*On the Normal Rainfall of Bengal.*—*By* H. F. BLANFORD, ESQ., F. G. S.

Mr. Blanford read his paper, which will shortly appear in No. III., of Part II, of the Journal.

After a few words on the interesting nature of Mr. Blanford's inquiries, the President said it seemed to him that the paper just read, condensed itself into the statement of a law something as follows, namely, that in monsoon rains with continuity of the same conditions of earth surface, the rainfall diminished gradually from windward to leeward; for instance in the delta of Bengal, the rain-

fall diminished from a maximum along the line of sea coast to a minimum at the foot of the Hills; and again the rainfall diminished from another maximum at the first crest of the Hills to a smaller amount further in upon the corresponding plateau. And it was easy to see why this should be so; the vapour-bearing air masses continually parted with their freight as they went on, and so less and less rain was the result, until some new element was introduced into the conditions which had the effect of increasing the degree of saturation. At the Hills this was brought about by a simple mechanical process; the advancing stream of air and vapour under the influence of its own velocity, and the pressure from behind slided up the escarpment, and was thus with comparative suddenness carried to an elevation, which at once gave rise to very great rarifaction and consequent disappearance of heat. Also the low temperature of mountain surfaces maintained by active radiation conduced to the same end. In this way, the charge of vapour in the air brought up from below became excessive in relation to the heat available for the purposes of maintaining it in a state of suspension and large quantities were precipitated. He did not know whether the great rainfall along the coast line had been ascertained to be a true maximum or not. It would not be easy to make very accurate observations on the amount of rainfall at sea: but he was prepared to learn that this rainfall was really a maximum, and if so, he was inclined to attribute it to a cause in some sense the reverse of that which effected the saturation at the mountain top, *i. e.*, an increase in the quantity of vapour instead of a diminution of the temperature. Having regard to the fact that the delta was literally sown with shallow tanks, khals, and pieces of water of every sort and size, he thought it very possible that the surface soil heated by a tropical sun might, under these circumstances, yield a more plentiful supply of vapour than the sea itself. In truth this arrangement of land and water bore no slight resemblance to the general form of contrivances for multiplying the heating surface for the generation of steam in boilers.

With regard to the occurrence of a rise in the barometer at Cherrapoonji immediately before a heavy fall of the monsoon rains, this might be caused by increase in the vapour-flow from

below ending in a downfall of rain, but until actual precipitation took place, simply effecting an augmentation of the material of the superincumbent atmosphere. It might be likened to the increase of depth in a stream of water caused by increase of supply from its source. If this were so, the like phenomenon ought to be observed on similar sites, such for instance along the Western Ghats.

Mr. W. G. Willson said,—With reference to the observed rise in the barometer at Cherrapoonjee before rainfall, I would remark that, as the same phenomenon has not been noticed at other Hill stations, it can hardly be explained by any increase of pressure which might be caused by the vertical displacements of the aerial currents as they are forced upwards, coming in contact with the sloping sides of the mountains.

Nor does it seem probable, *à priori*, that the forcing of masses of air over an elevated region would increase the atmospheric pressure, in that region, above its normal condition; since the equilibrium could be maintained by the lateral distribution of what otherwise might cause an excess of atmosphere.

We will probably have to look for the explanation of the phenomenon of the increase of atmospheric pressure before rain (if such be the case) in the same local configuration which causes the enormous rainfall for which Cherrapoonjee is celebrated.

As I understand, Cherrapoonjee is situated at the head, or focus, of a system of valleys, wide at their entrances, but narrowing up and converging as they approach their common focus.

The prevailing winds force atmospheric masses up the sides of these valleys. These masses are *horizontally* compressed as they are forced, from the much wider, to the narrower limits converging to Cherrapoonjee.

It is possible that this horizontal compression *alone* may be sufficient to saturate the region about Cherrapoonjee, and thus be a cause of excessive rainfall, as well as increased atmospheric pressure before rain.

Dr. Oldham said, he thought the peculiarity of position of Cherrapoonjee, and the effect which this had on the fall of rain there and on the atmospheric pressure, had scarcely been fully appreciated.

The station of Cherra was not only, as it had been described, placed not far from the southern face of a range of hills, which rise nearly perpendicularly from the plain of Sylhet, the face of the scarp being nearly at right angles to the prevailing winds, but it was also encompassed on either side by huge glens or valleys which have been cut down to the depth of several thousand feet, and which extend from the plains well into the hills, and curving round on either side, leave but a very limited area between. Now not only was the surcharged atmosphere which had floated over the plains driven by the prevailing winds against the face of the hills, but it was also driven up these gorges or glens, and the various currents of saturated air met just over the station of Cherra. Rolling up from either side the thick fog-like mist meets in a dense mass above the station, and as he had expressed it some sixteen years since, the saturated sponge, as it were, was suddenly squeezed, and the moisture which it previously held, deposited. This also readily accounts for the greater atmospheric pressure at those times.

II.—*Notes on Samarqand. By* Monsr. de Khanikof. *(From the Russian.) Communicated by* T. O. Forsyth, Esq.

(Extract.)

Twenty-six years ago on the $\frac{2}{14}$ September, 1841, I saw for the first time the celebrated capital of Timurlang from an elevated spot on the road leading from Bukhárá to Samarqand, where I arrived exhausted by the heat and covered with dust.

Vast ruins scattered over the country immediately surrounding the city, plainly indicated that its glory had passed away. Nevertheless in spite of its decrepit state, it presented an imposing aspect when viewed from a distance. I must confess that the pleasure with which I contemplated the landscape, was considerably enhanced by the recollection, that since the 8th September, 1404, the day on which Gonzales Clavijo, Ambassador of Henry III. of Castile, entered Samarqand, no European had penetrated that celebrated town.

About three o'clock, I was informed that Ibráhím Dádkhwáh, the governor of Samarqand, had sent his horses and farráshes, and wished to see me.

His Sepoy guard was ranged in two lines under the deep dark gateway of his castle, dressed in loose gowns and pointed cloth hats bordered with sheepskin. Their equipments were as varied as they were fantastical; one could imagine they had been armed for the occasion with weapons borrowed from some Museum of the Middle Ages. There were guns, spears, clubs, axes, and even bows, and quivers full of arrows. After crossing one or two courts, we entered a vaulted passage, also filled with soldiers. It terminated in a large court with a fountain in the centre, and a spacious *Aiwán*, or roof, supported with wooden pillars.

Ibráhím Dádkhwáh was not there, but I had scarcely seated myself on a small carpet spread for me, when he appeared and sat down on a cushion in the middle of the Aiwán. Seeing that my place was so far removed from the governor's, I rose and heedless of Chaurí ágásí's frantic signals, seated myself within half a yard of him.

This conduct, which the Bukháris evidently considered very bold, made a different impression on the old Uzbak with whom my business was; for he addressed me very cordially in the Tartar language.

The day following, which, in accordance with some foolish point of Bukhárian etiquette, I was obliged to spend at home, that I might rest from the fatigues of the journey, a numerous party came to visit me. They were natives of Marw, and therefore descendants of the inhabitants of that town who, in the reigns of Sháh Murád and his son Amír Haidar, had been carried away by force and settled in Samarqand. They brought me quantities of peaches, and received in exchange several yards of cloth and a few *tangas*, the small silver coin of the country worth about ten pence. I gathered from their conversation that they were bitter, though secret, enemies of the Bukhárian government. The invasion of Nádir Sháh and the conquest of Bukhárá by the Persians had made a deep impression on their memories, and they still cherished a firm hope of one day seeing a repetition of those events, the more so as they can foresee no better termination of their sufferings. This leads me to think that although the present generation was born on the soil of Bukhárá, and is obliged

to profess the Sunní religion, yet the greater portion remained Shí-'ahs at heart, and this of course was an additional cause of hatred towards their oppressors.

I was informed by my visitors as well as by my host, who seemed to be thoroughly acquainted with the statistics of the district, that Samarqand comprises, under the present governor, fivé tumáns or cantons, yielding on an average 70,000 batwans of corn of various sorts, that is to say, about 9,168,320 kilogr. of grain, of which 30 per cent., or about 2,750,000 kilogr., are levied by the government as *khiráj*, or land tax. On every field of corn of one 'ṭanáb,' equal to 3,098 hectares, the government levies a tax of 18 *tangas* or francs, and 6 tangas for each ṭanáb sown with grass. This revenue ought to suffice the governor for his own subsistence; for the pay of his servants and officers, and for the wages and support of 250 *naukars*, or sepoys, that form the garrison of the province in time of peace. The rest is sent to the Amír as 'peshkash' or present for the New Year's day on the 21st of March. For instance, in 1841, he sent the sum of 150,000 tangas by his son to Bukhárá. This does not include the revenue which is sent direct to Bukhárá to the Zakátchí Báshí, an official totally independent of the governor. The tax levied on the flocks of sheep, comes under a different administration and is brought to the Amír every spring, by officers specially employed for the purpose. I could not gain exact information as to the value of those two last duties; but the customs of Samarqand can yield but an inconsiderable sum; for the duties are only levied on caravans from Kokán and Bukhárá.

On the 4th, 5th, and 7th of September, I visited all the objects of interest in Samarqand, of which there are but few; but before describing them, I must say a few words about the town in general. The topographer, Yakovlef, who accompanied Messrs. Lehman and Bogoslofski, has drawn up a plan of Samarqand, which I have enclosed in my description of the Khánát of Bukhárá, published in 1843.

The wall of the town was in very good condition, when I visited it. The whole forms an almost perfect square, or rather trapezium; for the northern side is longer than the others. The most irregular wall is that on the west, where the fort projects. This wall

corresponds exactly with that of Bukhárá in height and in thickness, as well as in its battlements and turrets. It is 13 kilometres, 819 metres, in circumference, and encloses a space of 2533¾ ṭanábs.

Samarqand is therefore larger than Bukhárá by 500 ṭanábs. This is occasioned by the number of gardens; for, in point of population, it is decidedly inferior to the latter town. The inhabitants are reckoned at from 30,000 to 35,000 souls. The outer wall has six gates. On the western side, it has but one gate, the Darwázah i Bukhárá; there is also one on the eastern side called QalandarKhání. The south and north sides, have each two gates; those in the former are called Paikobák [Kaiqubád ?] and D. Chák i Zindah; the others D. Sozan-girání and D. Khwájah Ahrár. The last takes its name from the venerable saint of Samarqand, who is buried close to this gate. The ruins which surround the town lead one to suppose that it was formally of much greater importance than it is at present, or when it was rebuilt after one of its numerous catastrophies, it must have been enlarged towards the south-east. The ground to the west, more especially that northwards of the wall, which bears the name of Qal'ah Afrásiáb is more thickly covered with ruins than the rest. This, however, cannot have taken place very recently. Since the time of Timur, his ancient capital has not altered in form. One thing is certain that in the height of its prosperity, the environs of Samarqand were in a much better state of cultivation than they are now, and vestiges of gardens still remain where, by Timur's order, his wives entertained Clavijo so magnificently. The town is supplied with water by three rivulets descending from the northern declivity of Mount Azalyk. The first enters Samarqand a little to the eastwards of the Khwájah Ahrár gate; having skirted the eastern and northern sides of the Fort, it leaves the town and waters the fields to the north of the Bukhárian road. The second water-course entering the town near the gate of Sozan-girání quits it on the eastern side and unites with the third which skirts the same sides, both together flowing into the Áb i Mashhad, as the people call it. This stream washes the base of the northern wall of the town. Such an abundance of water admits of every house being well supplied, and contributes greatly to the salubrity of the town.

M. Struve, in our Geographical Report on Central Asia, fixes the latitude of Samarqand at 39° 38′ 45″, and its longitude 64° 38′ 12″, E. of Paris.

III.—*Notes on a Trip across the Patkoi Range* from Assam to the Hookoong Valley.—By* H. L. JENKINS, ESQ.

Last year I was unable to get beyond the Nongyang Lake, partly from want of provisions, and partly owing to my having started late in the season, the Singfoos were too busy reaping their crops to accompany me. I attempted to start much earlier this season with my friend, Mr. A. J. Peal; but some of the Singfoos who had agreed to show the road were unfortunately detained by a lawsuit. Waiting for them, we lost several days, and ultimately did not leave the last village on the Namroop till the 6th December. Following the path described last year up the Namroop river, and then up the Nambong and Nunkee streams, we reached the summit of the Patkoi about 2 o'clock on the 8th December. To our great disappointment on examining the barometer we found it broken and useless. Water boiled at a temperature of 208, giving an altitude of about 2,140 feet. The air was very clear, and it was plain to see that the Patkoi, which is here only a single ridge, could be crossed five or six hundred feet lower by making a slight bend to the westward of the present path. That night we descended some three or four hundred feet and camped near a small spring of water.

Continuing the descent very gradually the next day in an easterly direction we crossed the stream from the Nongyang Lake about noon, and then ascended the Digoom hill and stopped at the first water we could find on its eastern slope. We estimated the distance travelled that day at fifteen miles. The path lay through thick forest; we lost it several times during the day, and were obliged to halt whilst the Singfoos dispersed themselves in all directions to find it.

Early on the following day we came on a small stream, also called Digoom, and went down its bed, for some hours occasionally

* For a Map *vide* Mr. Jenkins' first paper published in Proceedings Asiatic Society, Bengal, for 1869, pp. 67 to 74. THE EDITOR.

skirting the water through dense wet jungle. About noon we struck off from the right bank over a low hill to the Loglai, a shallow but very rapid stream about eighty yards broad. It seemed advisable to camp early, in order to construct better shelter than usual, as rain threatened; so we halted for the night on the sand on the bank of the Loglai about half a mile below a large poong, or salt-ooze. Distance this day about ten miles.

During the whole of the next day our course lay down the bed of the Loglai, and we made very slow progress at first over the enormous boulders and rocks of sandstone; but the river became larger as we advanced, receiving much additional water from numerous small streams flowing into it on either side. Towards evening large rocks and boulders were less frequently met with, and we got on faster over the sand and shingle; we stopped at the mouth of a little stream called Kysoo, having travelled eleven or twelve miles. Here the Loglai is navigable for canoes, and the extreme width of its bed exceeds a hundred yards.

On the 12th leaving the Loglai we ascended the Kysoo for two hours, then crossing a low hill came on the Namlip, a stream similar to the Kysoo, and travelled down its bed till evening, camping on its bank. Distance about sixteen miles. The path during the whole day was good. The beds of both streams are composed of shingle and gravel with few large rocks. The forest, as on the Assam side, is composed of very large trees, and the undergrowth of jungle is impenetrably thick.

On the morning of the 13th, we found there was barely rice enough in the camp to give each man one meal, so it was necessary to force the pace, in order to get into a village as soon as possible.

Following the Namlip for about an hour we reached its confluence with the Yoongsoom, a stream of the same size. For four hours the path led up the Yoongsoom, occasionally skirting the water through very heavy and extremely wet jungle until that stream became so small as to be untraceable, when crossing a piece of high lying forest land we came on the Yoongmoi, a somewhat larger stream than either of the two former. About two hours' walk down the bed of the Yoongmoi brought us to the Namyoong, a river not much inferior in size to the Loglai, but deeper and less

rapid. We held on our way up this river until it became dusk when we were glad to learn that the Namyoong village was close at hand. Our guides told us that it would be highly improper for a party of strangers to enter a village after night-fall, so we camped on the sand on the bank of the Namyoong and sent off two men to the village for food. In about an hour the men returned bringing with them a good supply of rice and some fish, and they also brought us back our money. On hearing of our necessity, the people of the village had gone round from house to house collecting rice, and with the contributions they sent a message to say that they were not jackals but human beings, and could take no payment from hungry travellers. The Gham, or Chief, sent us an invitation to enter his village in the morning. Distance this day about twenty-four miles.

On the 14th, we went up the river to the Namyoong village, about a mile above our encampment. This was the ninth day since we left the last Assam village, and during this time we had seen no cultivation, not even a bit of clearance, and the sight of the large open rice-fields gave us no small pleasure. Making our encampment on the side of the river opposite to the village, we were soon surrounded by the inhabitants, about two hnndred in all. They brought presents of fowls, rice, eggs, fish. It is the Singfoo custom to present a guest with food as soon as he enters the house, and the Gham's wife brought us a small quantity of cooked rice neatly tied up in plantain leaves and some "Sahoo," a sort of whiskey distilled from rice. This spirit was very acceptable, as our own stock was nearly exhausted. It is very strong, and not unpalatable when one becomes used to it.

The Gham, whose name is Ningroo Menoh, was very civil, and told us to apply to him for everything we wanted. After chatting some time, he told us that a messenger had arrived with a letter for us from the Chiefs of the large Singfoo village on the Denai, and he was good enough to say that the letter should be delivered the next day. We asked for the letter, and to see the messenger at once, but were gravely reproved for wishing to transact business on the very first day of our arrival; and as our own Singfoos agreed that our request was most unceremonious, we were obliged to appear contented.

Early the next morning we made enquiry for the letter, but were again told that our haste was ill-mannered. "The Gham," they said, "eats first, and after that he is at liberty to pay attention to matters of less importance." About noon we obtained possession of the letter, which was written in Shan, the Singfoos having no written character of their own. A Kamptee boy, who came with us from Assam, read out the contents, of which the following is a translation:—

"Sibbom Gham and Seroj Gham having consulted all the other Ghams send this. Jenkins Sahib is not permitted to visit our villages. No European has ever come this way. If the Sahib wishes to see our country, he should come through Burmah. The Ghams will not allow him to come by the Patkoi. He must return."—By Legandoi messenger.

Ningroo Menoh then handed us another slip of paper conveying to him the following instructions:—

To Ningroo Menoh.

"Detain the Sahib at your village till you hear from us. If you are unable to detain him or turn him back, send us a message, and let your messenger travel day and night." From Sibbom and Seroj Ghams.

On questioning Legandoi, the bearer of these letters, he at first laid the whole blame on the Burmese Woon or Governor of Magong, who, it appears, though he does not attempt to govern the Singfoos, is supposed to exercise political control over them to a certain extent. It would seem, however, that the influence this officer possesses in Hookoong at present is little more than nominal; for the messenger explained that when the Ghams are agreed amongst themselves as to any particular line of conduct, they ignore the existence of the Woon. Burmese authority, he told us, was maintained by the excitement of dissensions amongst the different clans—no single Chief who has any cause of disagreement with his neighbours dares incur the displeasure of the Woon, lest the Chiefs with whom he is at variance should be invited to burn and plunder his village.

Whatever the cause may be, it is certain that the Burmese are heartily detested by the Singfoos.

As our Assam Singfoos refused to go on with us until the prohibition was removed, we determined to send a remonstrance and to wait in the neighbourhood of Namyoong for a reply.

We wrote to the Ghams of the Denai villages, that we considered it hard to be detained, reminding them that their people had full liberty to go into Assam whenever they please, and that their traders travelled all over Upper Assam unmolested, and we begged them to give us permission to go forward and see them.

On the morning of the 16th we sent off three of our own people with Ningroo Doo, the younger brother of Ningroo Menoh, with our letter and with presents for Sibbom Seroj and four other Ghams of note.

We received no reply till the 25th when Ningroo Doo returned. He told us that the Ghams after much discussion had not come to any agreement up to the time of his leaving them as to whether we should be allowed to go forward or not, and that, as the small-pox had broken out in some of their villages, the people were averse to any travellers being allowed to move about, wishing to prevent the disease from spreading; he had returned to let us know that there was little probability of our being allowed to go on immediately. It was hardly to be expected, perhaps, that isolated tribes like the Singfoos unaccustomed to European visitors would give up their seclusiveness at the first call without some hesitation; but we had lost so much time at the commencement of the journey that neither of us could afford to wait longer, especially as the chance of being allowed to proceed on a very early day seemed to be small.

So on the 26th we commenced our return journey through the Mosang Naga country, as we wished to examine the pass by which Griffith, and Bayfield crossed the Patkoi in 1837.

This route has already been fully described by Griffith, so it does not seem necessary to say much regarding it. There are four steep ridges crossed by this path rising 3,000 to 4,000 feet, besides the main range itself, on which we boiled water at a temperature of 202, the temperature of the air at the time being 63, giving an altitude of about 5,500 feet above the sea level. It is much to be regretted that Griffith chanced to take this route; for it is doubtless owing to his description that a general impression has arisen

that the Patkoi Range is a formidable barrier erected by nature to prevent communication between India and the countries lying to the east.

Whilst at Namyoong village, which he found from observation to be about 26.30 lat, we had several opportunities of conversing with the people of the Meeroo tribe who inhabit the mountain range to the east between Hookoong and the Irrawaddy.

From the description given by the Mooroos there would appear to be several passes of no great elevation through this range. The Meeroos wear Chinese ornaments, and bring articles of Chinese manufacture to Hookoong for sale. Besides these ornaments and their pipes we noticed earthenware cups, copper cooking vessels, wrought-iron ploughshares, and cast-iron pans, all undoubtedly of Chinese make. Neither the Singfoos nor the Meeroos make any use of copper as a circulating medium. In the larger transactions they use lumps of silver obtained from Yunan and from the Shans of about half a pound weight, and these lumps are unhesitatingly chopped into small pieces and weighed out when it is requisite to measure the price of articles of small value. They have some rupees in circulation, but these coins are looked on with suspicion on account of the impurity of the silver. The dearness of salt was most remarkable. A coarse black salt was selling at about the rate of a shilling a pound. We met with several people who had traded in the Pansee country, and one of the routes they described strikes the Irrawaddy at Mainlah, a large Shan village, situated on the left bank of the Phoongmai at its confluence with the Irrawaddy.

In a little map attached to Dr. Clement Williams's book on Upper Burmah, Mainlah is placed at the mouth of a large river in lat. 26, or about 130 miles above Bhamo.

Dr. Williams does not give the name of this river; but it is well known to the Singfoos and Meeroos as the Phoongmai Kha.

We were informed that a man carrying a load could reach the nearest Pansee villages from Mainlah in two days' march.

The Singfoos divide the Chinese into two classes—those who eat pork, and those who do not eat pork. The pork-eaters, they said, used formerly to come down the Phoongmai in great numbers and

cross to Hookoong for jade and amber, but of late years, owing to war between the two classes, the trade has been restricted to the abstainers from pork. It is to be remembered that the route across the Patkoi by the Nongyang Lake is no new scheme now brought to notice for the first time. Thirty-five years ago, attention was directed to this same route by Captain Charlton, then commanding the troops on this frontier, who is known to fame as the first man to discover the tea plant in British India. Captain Charlton writes—his letter will be found in the *Journal of the Asiatic Society* for January 1835—"What a pity there is no means of communication between Suddya and Yunnan. A good land road, and there are no natural obstacles of any consequence to prevent it, would afford an outlet for British merchandise into the very heart of China." As the Singfoos of Hookoong trade with Yunan and with Assam, it cannot be disputed that Captain Charlton was right in asserting that no physical obstacle exists to prevent a thoroughfare from being established the whole way.

It has been urged with some plausibility that the Singfoos are so poor and so simple in their habits, that they do not want better communication with other countries, because they could reap no benefit from freer intercourse. It is true that their wants are few; but some of these wants are very ill-supplied, as in the case of salt for instance, which is very bad in quality and very dear throughout Hookoong; besides, the bulk of the population engage in some kind of barter when not occupied in cultivating, and a people of this kind would not be likely to oppose the opening of a road, because they are capable of seeing that the measure would prove to their advantage.

But whilst the people themselves may be trusted not to oppose their own interests, it must be admitted that some difficulty lies in the fact that nearly all their Ghams are large slave-holders, and suffer heavily and constantly from the escape of their slaves across the border into British territory. All the Chiefs feel a great deal of irritation against us on account of the extreme abolitionist policy that has been adopted of late years. Still, considering the magnitude of the question, it will hardly be said that the cost of indemnifying a score or so of petty Chiefs for the loss of their slaves

would be a heavy impost, and it would seem to be no more than fair to give the Ghams the means of purchasing that amount of labour from their servants, which they have been accustomed to obtain by force, if we interfere to prevent the exaction.

As there is now a British officer resident at Bhamo, it might be possible to send a party up the Irrawaddy to explore and make a rough survey of the river as far as Mainlah. In all probability, a party starting from Assam would be able to reach Mainlah; for since we have returned, a letter has been received from the Donai Ghams, inviting us to meet them next year at Serojmo.

Serojmo is said to be only six days from Mainlah.

The 16*th January*, 1870.

IV.—*A Contribution to Malayan Ornithology.—By* Dr. F. Stoliczka.

(Abstract.)

The paper contains notes on about one hundred species of birds which have been collected chiefly in the Wellesley Province, the country East of Penang Island. Although the geographical situation of this Province is intermediate between that of Malacca and Tenasserim, the fauna bears a greater relation in identity of species to the former than to the latter. A number of the species recorded are also found at Malacca, Sumatra, and Java, and do not appear to extend further North; others are also met with in the Tenasserim and Burmese Provinces; and a few are common to India generally. In several cases intermediate forms between those occurring in Burma, or North Eastern India and those found on Sumatra, Java and the other islands have been noticed.

Dr. Stoliczka drew the attention of the meeting to the marked difference which exists between the fauna of North Eastern India and Burma, and that of South-Western and Southern India. The former extends from the central Himalayas about Darjeeling through Assam, Cachar, Burma into the true Malayan Provinces, and is characterized by a very large number of peculiar Malayan types; the latter has a strong admixture of African forms. The first appears to have travelled from South East towards North West and the other from South West towards North East, and both appeared to have been stopped in their further pro-

gress partially by the intervening Bengal Provinces which at the time of the migration were probably open sea, partially by the Himalayan range in the North, though this could not have had formerly the gigantic dimension and altitude which it now possessed. In the South of India and on the Malabar coast Malayan species again occur.

Mr. W. T. Blanford endorsed the views expressed by Dr. Stoliczka, and mentioned some of the peculiar African types which are to be found in the fauna of Central India. He said a list of birds collected in a district West or South-West of Nágpúr contains almost as many African types as it does of Indian.

The reading of the following paper was postponed—

On the Capture and Death of Dárá Shikoh.—By H. Blochmann, Esq., M. A.

The receipt of the following communications was announced—

1. *Gond Words and Phrases.—By* Reverend J. Dawson, *Chindwárah.*
2. *Second List of Birds from the North-Eastern Frontier.—By* Major H. H. Godwin-Austen.

The meeting then broke up.

Library.

The following additions have been made to the Library since the last Meeting.

Presentations.

*** Names of Donors in Capitals.

Proceedings of the Royal Society, Vol. XVIII, No. 118.—The Royal Society of London.

Report of the Committee of the Bengal Chamber of Commerce, 1869-70.—The Bengal Chamber of Commerce.

Catalogus Musei Botanici Lugduno-Batavi, digessit F. A. Guil. Miquel. Pars Prima, Flora Japonica.—The University of Leyden.

Annales Musei Botanici Lugduno-Batavi, edidit F. A. Guil. Miquel. Tom. IV, Fasc. 6-10.—The University of Leyden.

The Journal of the Chemical Society, for February, March, April, 1870.—The Chemical Society of London.

Monatsbericht der Königlich-Preussischen Akademie der Wissenschaften zu Berlin. January to April, 1870.—THE BERLIN ACADEMY OF SCIENCES.

Abhandlungen der Königlichen Akademie der Wissenschaften zu Berlin, 1867-68. THE KÖNIGL. AKADEMIE DER WISSENSCHAFTEN, BERLIN.

Actes de L'Académie Impériale des Sciences, Belles-Lettres et Arts de Bordeaux, 3e Série, 30e année.—THE BORDEAUX ACADEMY.

Bollettino della Societá Geographica Italiana, Fascicolo 4°.—THE ITALIAN GEOGRAPHICAL SOCIETY.

Schriften der Königlichen Physikalish-Œkonomischen Gesellschaft zu Königsberg, 8th and 9th vols.—THE KÖNIGSBERG ACADEMY.

Notes of a Visit to Gujrát in December, 1869, by J. Burgess, M. R. A. S., F. R. G. S.,—THE AUTHOR.

From Calcutta to London by the Suez Canal, by the Rev. C. H. Dall.—THE AUTHOR.

Balwantnámah (Urdu MS.).—W. OLDHAM ESQ., LL. D., C. S.

Report on Sanscrit MSS., submitted to the Goverment, by Rájendralála Mitra.—THE AUTHOR.

Prabad Mala, or Bengali Proverbs in English.—REV. J. LONG.

Professional Papers on Indian Engineering, May 1870.—THE EDITOR.

Nuskhah i dil-kushá, Vol. I., by Janmejaya Mitra.—BABU RA'JENDRALA'LA MITRA.

Records of the Geological Survey of India, Vol. III. Part II.—THE SUPERINTENDENT GEOLOGICAL SURVEY.

Selections from the Records of the Government of India, Home Department, No. LXXIV.—THE GOVT. OF BENGAL.

Selections from the Records of the Govt. of Oudh.—THE SAME.

Selections from the Records of Govt. N. W. Provinces, Vol, III., No. 2.—THE SAME.

Selections from the Records of the Govt. of the Panjab, No. VI. —THE SAME.

Selections from the Records of the Govt. of Madras, No. XI.. —THE SAME.

Sections from the Records of the Bombay Govt., No. CXV. —THE SAME.

Report of the Meteorological Reporter to the Government of Bengal, Meteorological Abstract for 1869.—The same.

Sanitary Report for Oudh, 1868-69.—The same.

Report of the Sanitary Administration of the Panjab, 1868.—The same.

Report of the Police of the Lower Provinces of the Bengal Presidency, for 1868, Vols. I. and II.—The same.

Annual Report of the Madras Medical College, 1868-69.—The same.

Report on Madras Civil Dispensaries, 1867.—The same.

Report on Popular Education in the Panjab, for 1868-69.—The same.

Report on the Administration of Civil Justice in the Province of Oudh, 1868.—The same.

Annual Report of Criminal and Civil Justice, Rangoon, 1868.—The same.

Report on the Administration of Civil Justice, Panjab, 1868.—The same.

Exchange.

Nature, Nos. 27—31.

Athenæum for April, 1870.

Purchase.

The Annals and Magazine of Natural History, Nos. 28—30.—The London, Edinburgh, and Dublin Philosophical Magazine, Nos. 261-262.—The Ibis, Vol. VI. No. 22.—Revue et Magasin de Zoologie, No. 3.—Revue des Deux Mondes, Avril, Mai.—The Westminster Review, April.—The Edinburgh Review, April.—The Quarterly Review, April.—The North British Review, April.—Comptes Rendus, Nos. 13—16.—Exotic Butterflies, parts 73-74.—Leçons sur la Physiologie, par H. Milne Edwards, Tom 9, part II.—Schmarda's Neue Turbellarien, Rotatorien und Anneliden.—The Classification of the Sciences, by H. Spencer.—Duncker, die Geschichte der Arier.—Jenyns' Observations in Natural History.—Johnston's Chemistry of Common Life, 2 Vols.—The Year Book of Facts, 1861, 1862, 1864, 1867.—Intellectual Observer, Vols. I.—IX. and Nos. 43, 46, 48—51, 55—62, 64—70.

PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL

FOR AUGUST, 1870.

A meeting of the Society was held on Wednesday, the 3rd instant, at 9 P. M.

The Hon'ble J. B. Phear, President, in the chair.

The minutes of the last meeting were read and confirmed.

The following gentlemen duly proposed and seconded at the last meeting were balloted for and elected Ordinary Members—

R. H. Wilson, Esq., C. S.

A. M. Broadley, Esq., C. S.

The following gentleman is a candidate for ballot at the September meeting—

R. F. St. A. St. John, Esq., Superintendent of North Arracan, Akyab, proposed by the Hon'ble J. B. Phear, seconded by H. Blochmann, Esq.

The following gentleman has intimated his desire to withdraw from the Society—

W. L. Willson, Esq.

A letter from A. C. Lyall, Esq., Commissioner of West Berar, forwarding copies of inscriptions found in the district, was laid on the table (*vide* Proceedings for July).

The following letter from Major F. W. Stubbs, enclosing a Sanscrit inscription and several drawings, was read—

Attock, 20th May, 1870.

"I send you drawings of an inscription and some curious rude carvings, both on rock, which I copied from the originals near this the other day. The Post Master here, Imám 'Alí, told me,

there was an inscription on a well of which he had long heard, but had never seen; so we made an expedition together on the 10th instant, and visited the place. This you will see by the sketch map I send, is not far off. We drove out a little beyond the old fort near Mala Mançúr, where the Tahçíl used to be kept in the days of the Mughuls, and the revenue realized from the district (a much more fertile one than in the Sikh rule, or since) deposited. Its name *Jamgáh* is not found on any of the Government maps. From thence, we rode along a short cut towards Kámilpúr, leading for a distance up the bed of the Kaneyr river. About a couple of hundred yards off the road to the right, our guide stopped, and pointed to a small quartzite boulder imbedded in the ground close to a small depression, which he said had once been a well. The inscription is on a flat worn surface of the stone. Unfortunately a large part has been broken off from the corner, and more than half the first line, and part of the next three, are thus lost. I could not trace any mark of violence on the stone; but the fracture must have been caused by violence. Along with a facsimile, I send a copy which I took in pencil, in order that you may compare both. The original rubbing I send in a second packet with some others. The letters appear to be of the ninth century. I hope the lost part will not prevent the general meaning from being read.

From thence the guide took us to another place, where he told us there was a rock carved all over with letters which no one could read. Going down the dry bed of the Kaneyr and a little way up that of a small confluent, we found a large block of reddish brown clay slate on a flat, somewhat worn cleavage surface of which, about 6 feet broad by 4½ deep, were a number of curious looking characters, that at first puzzled me much. Without any order of position or regularity of shape, slightly indented with the blunt point of an instrument, rather than engraved on the rock and very time-worn, it was difficult to make out what it was that had been scratched upon the slate. With the aid of a slanting light, however, I was able to recognize a stag, and soon the lines resolved themselves into a curious collection of animals with here and there something intended to represent a man. I send drawings of the

three plainest, as also the rubbings I took. In two of the latter which I have put down separately, I have marked in colour the animal intended to be represented, a cow and perhaps a doe-antelope. Having done this, you know all I do of those curious relics. There were no letters on the rock. I thought at first there were certain Aryan characters, but closer examination showed nothing resembling a letter. There are no local traditions respecting either this or the well inscription; but the place may yield something else to further search. If so, I will try and get all I can.

The colouring of the drawings is as rude as the carving of the original. It does not represent the colour of the rock which is a dark blue brown, tinged with red."

Babu Rájendralála Mitra said—

"The letters of Major Stubbs' inscription are unmistakeably Sanskrit, so is its language. In the first line, the words *Sri Vishnu* are clearly legible.* The second I read *pada pari paṭṭaka,* "impression of the foot," and the third, *pakti prá bhuta kaustubha* "jewels (named *kaustubha*) arranged in a line," and infer therefrom that the monument was inscribed by some pious Hindú to record the dedication of a block containing an impression of Vishnu's feet; but a portion of the right hand side of the stone being broken and missing, I cannot be positive."

The following letter from H. JAMES RAINEY, ESQ., *Zemindar of Khulna, Jessore, addressed to* HENRY F. BLANFORD, ESQ., was read:—

Khulna, the 25th June, 1870.

"I have the honor to bring to your notice the occurrence in the Districts of Backergunge and Jessore, and even as far north as Furreedpore, I believe, periodically during the prevalence of the

* *Transcript of Major Stubbs' inscription in Deva Nágarí.*

श्रीविष्णु प्र * * *
पदपरिपट्टक क * *
पक्तिभूतकौस्तुभ ष * *
पठेवदच्करद्दाचिणि *
चठिकरै। *

S. W. monsoon and rainy season, of certain peculiar noises from the south and south-east directions, or seaboard, resembling the report of cannons or loud explosions, usually heard distinctly after a *heavy fall of rain, or cessation of a squall, generally whilst the tide is rising*, and to solicit your being good enough to investigate this physical phenomenon, with the view of discovering the cause thereof, as there most decidedly exists a profound ignorance on the subject by the public at large, and more particularly as it may prove of some interest to scientific research."

"In the *Englishman* Newspaper, a correspondent under the signature of *Barisal*, has lately noticed these singular noises, as you may have casually observed, with the avowed intention of obtaining an authoritative explanation of it; but judging from the futile effects of numerous previous similar attempts, I do not think, he is likely to meet with better success, which is my only apology for troubling you on the subject, though it may be hardly needed, as I venture to think, you will be sufficiently interested in the enquiry, to enter into it *con amore*." * * *

In inviting discussion, the President remarked that the subject was not quite new to the Society. It was brought forward several years ago, and a paper upon it was to be found in a volume of the Journal to which his memory did not at the moment enable him to refer. The better opinion at that time appeared to be, that the sounds were attributable to breakers on the sea coast. Phenomena of a similar kind, undoubtedly due to this cause, were met with elsewhere. In Devonshire and Cornwall, along the northern face of which at times a very heavy swell rolls in from the Atlantic, the booming of the surf is heard at considerable distances.

Mr. Westland said:—

"As to the actual occurrence of these unexplained sounds, there can be no doubt; they have been heard by very many persons and are perfectly well-known in those parts of country where they are heard. I have myself heard them, or at least have heard sounds agreeing in description with these "Barisal guns," to which I could not assign any known cause. About March 1865, a paper was read before the Society, by Babu Gour Das Bysack, in which he referred

to the sounds, and mentioned the theory of their being caused by surf breaking upon the shore of the sea, and he stated also that an expedition once started southwards to discover their origin, but after going a certain distance southwards, had to return.

As for the origin of the sounds, which are heard forty or fifty miles from the seashore, it does not appear to me that any reliable theory has been started. The opinion that they proceed from the operation of the sea and the rivers in the formation of islands, it is impossible to accept; for if the process of island-formation had been going on so violently and so frequently as would be indicated by the nature, and frequency of occurrence of these sounds, the Bay of Bengal would have been by this time half-filled with islands."

Mr. Dall remarked that his attention was first called to these mysterious sounds, during the month of September, twelve or fourteen years ago, at Furreedpore. He did not hear them, but was made aware that the attention of the European residents there, had been drawn to them, and not a little effort made to discover their cause. The idea, that they were echoed surf sounds from a distant shore, was never named or thought of. They did not appear to come from the direction of the sea side; which was also at too great a distance from Furreedpore, to be looked to as the place for sounds, that answered rather to the loud discharges of artillery three or four miles away. Mr. Dall was at the time the guest of Mr. Ravenshaw, (since made Commissioner of Cuttack), and he said that he had been occasionally awaked from a sound sleep, at midnight by these "guns." Such as he had heard, seemed to come from the east, and Mr. Ravenshaw had been told of a boating party crossing the waters from Furreedpore towards Dacca, who had first heard the "guns" in advance, and afterwards in their roar, westwards. Slight earthquake movements being by no means uncommon throughout Lower Bengal, most thinkers thereabout were inclined to ascribe the sounds to explosive gases stirred by some sort of volcanic action, and escaping to the surface through the waters, which, at that season, flooded the country in every direction, rendering *the place* of explosion difficult of observation by reliable witnesses. Native observation of the disturbance of the

waters (if Mr. Dall remembered rightly) had been occasionally reported, but hardly believed. The only other solution suggested at Furreedpore was, that the noises were caused by the falling in of large masses of earth from the sides of rivers which are every year changing their beds. The "guns" were heard, occasionally, in tolerably quick succession; and sometimes three or four in the course of an hour; and again weeks would pass without their being heard at all. But of this the speaker was not very definitely informed. He was sure that careful and intelligent observers, like Mr. Ravenshaw, would give the Society all they knew on the subject if applied to by the Secretary.

Mr. Blanford said that to enable the meeting better to appreciate the nature of the pheuomenon described by Mr. Rainey, and the explanations that had been hazarded respecting it, he would first read the brief notice of the Barisal guns that had already appeared in the pages of the Society's Journal. After reading an extract from a paper by Babu Gour Das Bysack, published in Part 1 of the Journal for 1867, (Vol. XXXVI) he pointed out that of the causes suggested, one only could be considered a *vera causa* and worthy therefore of attention, *viz:* that suggested by Mr. Pellew in the extract he had read, and again this evening by the President of the Society. Subterranean and volcanic agencies, &c., in the absence of any corroborative evidence, must be classed with the '*electricity*' which, at the present day, is popularly appealed to, as the cause of every ill-understood phenomenon, precisely as '*sulphur*' was appealed to in earlier times, under similar circumstances. A thick alluvial formation such as the Delta, would be but ill-fitted for conveying a sound wave under any circumstances, and did any such sound as that described proceed from subterranean volcanic action, it is difficult to conceive that it should be unaccompanied by any tremour of the ground. But none such is spoken of.

The conditions under which the sounds were heard, were all such as to point to the breaking of the surf as their cause. They are heard during the S.W. monsoon, especially in the lull after a squall when the surf therefore is highest. To clear up every supposed difficulty, much closer observation was doubtless required, than had hitherto been given to the matter. But as far as

present evidence goes, the beating of the surf seems a probable cause, and it is the *only* definite cause that has been assigned.

Mr. Westland said—"I hardly venture to differ in opinion with Mr. Blanford on a matter of this nature, but it seems to me that there is one very great difficulty in accepting the surf theory, which I shall try to explain.

In the first place, it must be remembered that these sounds are heard some forty or fifty miles from the sea shore. This is a distance over which the sound of cannon even rarely travels so as to be distinctly perceived, and even in the case of accumulated discharges of cannon, such as in firing salutes, or in the case of a battle, the instances of their being heard over such long distances, are sufficiently rare to be regarded as unusual phenomena. Now in the case of these "Barisal Guns" the noises are heard not rarely, but frequently, over these long distances, and after forty or fifty miles travelling from the sea, if they really come thence, they are still sharp and well-heard sounds. If they are produced by the breaking of surf, it is clear that to produce a sound loud enough to be heard so well over such a long distance, it will require, not the breaking of a wave at any one point, but the breaking of waves over a considerable extent of shore.

It is possible to imagine a wave breaking simultaneously over a long line of shore, but unfortunately sound does not travel simultaneously. The travelling of sound is very slow indeed over such a long distance as forty miles, and the concussion produced by the breaking of one part of the wave would necessarily reach the observer's ear long before that produced by the breaking of another part; the sound of this simultaneously breaking wave would, to the distant hearer, be scattered over a little space of time, and be therefore imperceptible through its being so scattered. The sound as it is actually heard, however, is sufficiently sharp to be compared, as it is by every one, with that of a gun.

It is not therefore by a simultaneously breaking wave, that the sound can be produced, but it can only be (on the wave-breaking hypothesis) by a number of waves, or what is the same thing, different parts of the same wave, breaking at different parts of the coast, their moments of breaking being so arranged, that the sound starting at these different moments from these differently distant

points, will reach the observer's ear at one instant of time, so that the concussions, though separately imperceptible, form, by their cumulative effect, a single perceptible concussion, producing the sound as of a gun. It is possible to imagine the occurrence, once in a way, of this exact arrangement of so many different waves, but it is a concurrent arrangement of so many elements as to form, even in a single occurrence, a wonderful coincidence. But that the same coincidence should occur, with respect to the same observer, over and over again at intervals of ten minutes or so, during a single night, is to me quite inconceivable; and I cannot at present accept a theory which requires me to believe in the frequently repeated occurrence of such an extremely unlikely event.

The chief argument in support of the surf theory, lies in the allegation that the sounds are heard most frequently in a lull following a storm, when the waves might be expected to be loudest. But this is a fact somewhat vaguely stated, and without more extended and more exact observation, it cannot be accepted as the basis of any conclusion.

Another remark I would make on the surf theory is this. We see the production of the noise depends upon the existence of certain conditions as to the comparative distances from the observer's ear of the various points where the waves break. Now to two observers distant from each other by even ten miles, these distances are necessarily quite different, and the same series of waves which combine to produce a perceptible sound upon the ear of one observer, cannot so combine with reference to the other observer. The various concussions will not meet at his ear, but will be scattered over a short space of time, and thus be dissipated.

If therefore we could find as a matter of fact that the sounds were simultaneously perceived by two distant observers, we could deduce from that fact the conclusion that they are not produced by the breaking of waves, or in fact by any other cause which is not strictly confined to one spot, but depends for its effect upon accumulation from a number of partial causes (such as the breaking of different waves, or different parts of the same wave) spread over a certain extent of space. The breaking of a wave two or three miles long, might be conceived so to take place as to produce at

any given point a simultaneous sound preceded and followed by silence, but the conditions necessary for it to produce that effect, would render it impossible that its sound should be heard as a simultaneous sound at any other point even slightly distant from the first.

The first step, as it seems to me, towards making any deduction whatever as to the origin of the sounds, is one which might easily be taken, and has not yet been taken, namely the investigation whether the nights when the sounds are frequent at one place, are the same as those in which they are frequent at another somewhat distant place. From a few comparisons bearing on this point, we could at least discover whether the cause was a general one, or only a purely local one.

Bábu Rájendralála Mitra thought that though the surf theory seemed to be viewed with great favor, it did not meet all the requirements of the case. There was no question that sound was audible from great distances under particular conditions of the atmosphere; but it has yet to be shown how, in travelling, it undergoes such transmutation, as to change the dull roaring of the surf into distinct detached sounds of the booming of a gun, and how that booming is heard eight or ten times successively, and then is followed by a lull. Heavy surf, besides, was common wherever the sea rolled over a low shelving beach, but it was not always followed by the peculiar booming. If it be said that the estuaries of the Delta favoured the transmission of sound, still the difficulty would remain unexplained; for the Deltas of the Iráwatí, the Mahánaddí, the Danube, the Mississippi and the Amazon, had similar estuaries, but they did not produce the "Barisal guns." At Púrí, too, they were never heard. Even at the base of the Gangetic Delta, they were not common every where, but confined to one locality, and it was probable therefore that some other agency was at work besides the surf to produce them.

Mr. Blanford said that he could not agree with Bábu Rájendra lála Mitra that the conditions of the Mahánaddí Delta bore any great resemblance to those of that part of the Ganges Delta, where the Barisal guns are heard, with regard to the supposed conditions of the phenomenon. The shore line of the Mahánaddí Delta is very

similar to that of other parts of the Orissa and Madras coast. There are no estuaries with expanses of sand banks which are dry at low water and exposed to the full brunt of the S. W. wind, and the direction of the wind in the S. W. monsoon is more or less parallel to the coast. There is therefore but one line of breakers, and the sound they produce is not so likely to be heard far inland. He could not therefore attach much weight to Babu Rajendralala Mitra's objection.

In reply to Mr. Blanford, Bábu Rájendralála Mitra said that it was true that the position of the Mahánaddí running towards the east was not favorable to a particularly heavy surf, but the Iráwatí opened to the south, and the rush of the tidal wave from the Southern Hemisphere marched on its coast with great force, but yet the peculiar booming sound was there never produced.

The President thought that Mr. Westland had over-estimated the force of two of the objections which he proposed to Mr. Blanford's explanation. In the first place, he felt sure from his own experience, that under favourable circumstances, the report of heavy ordnance might be heard at distances comparable with those of which Mr. Rainey wrote; in the part of Suffolk, with which he was familiar, it was not an uncommon thing to hear the guns of the Harwich redoubt, say twenty miles off, and probably these were all pieces of small calibre. And on some occasions, the sounds of firing at Sheerness or elsewhere in the neighbourhood of the mouth of the Thames, reached the same place, and must have traversed not less than fifty miles. Also he thought that if they reflected for a moment upon the behaviour of a roller as it broke upon the shore, they would perceive a reason, why its sound might at a distance be nothing more than a single report. The mass of water in motion, constituting one of these rollers, was during the swell, which succeeded a storm in the bay, exceedingly large. As the lower part was checked in its advance over the shallow flats of the coast, the crest of the wave gained upon its base, until it was left without support, and then an enormous volume of water endued with considerable horizontal velocity, fell from some height with a very great shock; this occurred first at the point of the roller where the mass and the elevation was the greatest; the shock was sudden, be-

cause it succeeded tranquillity, and it was violent. The process of breaking then ran along the length of the roller, but it was very different in result from the first crash; the fall of each succeeding element was in some degree stayed by its predecessors. All present who had been at the sea-side would remember how markedly the sound of the first blow of a great breaker prevailed above the continuation of the roar. On the shore itself, and for some distance inland, no doubt the whole sound, more or less prolonged and confused, would be heard; but he, the President, supposed it might well happen, that further inland still, the minor sound would be so weakened in intensity, as to be lost and only the greater, that which results from the first shock, would remain. If so, the phenomenon would be reduced, almost precisely, to that of a single distant explosion.* Also in the breaking of surf upon a beach, there always occurred maximum breakers at intervals of greater or less duration. Thus the explanation to which Mr. Blanford gave his support, seemed to be fitted to account for these so-called Barisal guns in all respects. But the matter should not be left to conjecture. A little careful observation ought to suffice to clear it up, and he thought the Council might readily effect the organization necessary for the purpose.

The following papers were read—

I. *On the Capture and Death of Prince Dárá Shikoh.*—By H. Blochmann, Esq., M. A.

(Abstract.)

Mr. Blochmann exhibited a rare (Delhi) MS., the property of the Government, bearing on the fly leaf an autograph of Dárá Shikoh. He said, the MS. was a copy of a religious poem by Baháuddín Sultán Walad, son of the great Çúfi-poet Mauláná Jalál-uddín i Rúmí, and was of great value as being in the handwriting of the author himself (A. H. 697, or A. D. 1297-98.)

The religious views of Dárá Shikoh, like those of the emperor Akbar, present many points of interest. He was the author of the

* *Prof. Tyndall* in his *Lectures on Sound*, says (p. 55)—"The roar of the breaking wave itself is mainly due to the explosion of bladders of air. The President.

Safinat ul-auliá, a work containing biographical notices of Muhammadan Saints, and of a treatise on Mysticism (*Taçawwuf*). MSS. of these two works are very rare, and the copies in the Government collection of Delhí MSS. are perhaps unique. The Persian translation of the Upanishads which was made at Dárá's cost, was mentioned by most Historians.

The writer then mentions the two battles which Dárá Shikoh lost against Aurangzíb, his younger brother. The first was fought on the 6th Ramazán, 1068 (28th May, 1658, A. D.) at Samogar, nine miles east of Ágrah, in the Parganah of Fathábád; and the second at Deorá, 3 *kos* south of Ajmír, on the 27th and 28th Jumáda II, 1069, or 12th and 13th March, 1659, A. D.

After the last battle Dárá fled to Ahmadábád, and from thence over Kachh to Bhakkar and crossed the Indus. He passed the territory of the Chandí tribe (Dehríkot, Long. 67° 34′, Lat. 27° 38′), that of the Magasís, and reached at last Dádar (Long. 67° 41′, Lat. 29° 26′), a town which enjoys the notoriety of being the hottest inhabited place on earth. The Zamíndár of the place, Malik Jíwan, received Dárá hospitably; but no sooner had the prince left Dádar for Qandahár than Malik Jíwan, or his brother, fell upon him, took him, and his son Sipihr Shikoh, prisoners, and handed them over to Aurangzíb's officers.

Dárá Shikoh was killed, at Aurangzíb's orders, by Nazar Beg Chelah at Khizrábád (Delhi) on the 21st Zí Hajjah 1069, or 31st August, 1659, and was buried in Humáyún's Tomb.

The writer then mentions the discrepancies between the *'Álamgírnámah*, *Maásir i Álamgírí*, *Kháfí Khán*, the *Tazkiratussalátín i Chaghtái*, and European Histories, as Bernier, Elphinstone, Marshman, &c. Elphinstone places the capture of Dárá Shikoh in *Eastern* Sindh, instead of near Qandahár, and gives instead of 'Malik Jíwan, Zamíndár of Dádar' merely the 'Chief of Jún or Jiún' (which lies in Eastern Sindh, between T'hat'hah and Amrkot). Marshman increases the confusion, by calling this Afghán Zamíndár 'a Rájah ;' but Malik Jíwan could not have been a Hindú, because he subsequently received from Aurangzíb the title of Bakhtyár *Khán*,—a title never conferred on Hindús. It would appear that Elphinstone, or the sources from which he copied,

read مالک جیون *málik i jiún*, for ملک جیون *mălik jíwan;* and *málik*, owner, having been translated by 'chief,' 'Jíwan' was arbitrarily changed to '*Jiún* or *Jún*,' to suit the 'owner.' But the name of the town in Eastern Sindh, which Elphinstone meant, is *Jon.* It is now quite unimportant; but it was formerly, up to the times of Akbar, renowned for its beautiful gardens.

A short discussion followed the reading of the paper as to whether the title of *Khán* had ever been conferred on Hindús or not. Several Members mentioned examples of Hindús bearing this title. Mr. Blochmann thought, they might have *assumed* the title; but he had not met with a single instance in the Histories of India, from the Memoirs of Bábar to the *Tazkiratussaláṭín* and *Kháfí Khán*, that the Mughul Government ever *conferred* the title of *Khán* on a Hindú.

II.—*Notes on the Archæological Remains on the Assia, Alti, and Darpan Hills (Orissa).—By* Bábu Chandra Sekhara Banerjea.

(Abstract.)

The antiquities noticed are met with on the summits of three hills, two of which are situated in the centre of the Kaṭak District, and the other on its western border. The names which the natives give to them are Assiagiri (marked Assiah on the maps), Náltigiri, and Bárunibánṭá or Mahábináyaka. The first of these has four peaks, on one of which the Prophet is fabled to have alighted for prayer on his aerial journey, and left his foot-print; there is a mosque built on a spot 2500 feet above the level of the surrounding country, by Shujá'uddín Muhammad Khán, in the year 1132 of the Hijrah. The second peak is called Udaya Giri. The sea is said to have once touched its foot, though it has now receded to a great distance. The most remarkable objects on it are a collosal figure of Buddha, nine feet in height, and a báolí, or well, lined with stones, a sculptured gateway, and remains of two temples. At the foot of the third peak are to be found the ruins of a large fort, and at that of the fourth peak, called *Achuta basanta,* there is a small building, once the abode of a hill chief. Close by is a place called Amarabáṭi, which was at one time the capital of one of the

Gangavansa kings. There was a large fort built of laterite, which has lately been entirely demolished, and its materials used for the repair of the Trunk Road. A magnificent tank, twenty acres in area, and some broken pillars are all that now remain to attest its former greatness. The Mahábináyaka hill stands by the side of the high road to Kaṭak, and is covered by a dense forest. It has a small temple and a perennial fountain which are held in great reverence by the people, and the place is reckoned to be one of the four most sacred spots in Orissa.

The receipt of the following communications was announced—

1. *Notes on the Mondar Hill.—By* BABU RASHBEHAREE BOSE, *Banka.*

2. *A Gondi Vocabulary* (enlarged).—*By* REV. J. DAWSON, CHINDWARA.

3. *The Vástu Yága, and its bearings upon Tree and Serpent-worship in India.—By* BÁBU PRATAPA CHANDRA GHOSHA, B. A.

4. *Notes on some Reptilia and Amphibia from Central India,—by* W. T. BLANFORD, ESQ., F. G. S., C. M. Z. S., &c.

(Abstract.)

The writer has been mainly induced to collect and note the localities of Reptiles by finding that the provinces into which Dr. Günther proposed, in his 'Reptiles of British India,' to divide the Peninsula, differ to a very important extent from those which appeared probable from a study of the land Mollusca, the birds, and mammals. It appears that Dr. Günther was to some extent misled by the imperfect evidence at his disposal; for the Reptilia appear to agree in distribution with the other animals mentioned.

The following are the Zoological sub-divisions, into which the writer proposes to divide India proper. He especially restricts this name to the country to which it was originally applied, and excludes the regions east of the Bay of Bengal, which are entirely different in climate, inhabitants, zoology, and botany.

1. The Panjab province. This is the eastern extension of the great desert province.

2. The Indian province proper, thus sub-divided—

a. Gangetic sub-province.

b. Deccan sub-province.

c. Bengal sub-province.

d. Madras sub-province, including Northern Ceylon.

3. The Eastern Bengal province. This belongs in a great measure to the Indo-Chinese fauna.

4. The Malabar province—Southern Ceylon and all the Western Coast of India, with the so-called Western Ghats, as far north as Bombay. Part of the fauna peculiar, the rest Indo-Chinese and Malay in its affinities.

A few of the Reptiles characteristic of each province, are mentioned.

The writer proceeds to notice some reptiles and frogs collected in parts of Central India in S. E. Berar, Chanda, Ráipúr, Biláspúr, Udaipúr, and Chota-Nágpúr. They are the following—

1. *Emys* [*Pangshura*] *tectum*, Bell, var. intermedia. A form intermediate in character between *Pangshura tectum*, Bell, and *P. tentoria*, Gray, and apparently connecting the two. It cannot be distinguished as a separate species.

2. *Emyda vittata* ? Peters.

3. *Trionyx gangeticus*, Cuv.

4. *Cabrita Leschenaultii* (M. Ed.).

It is shown that writers have hitherto probably been in error in confounding *Cabrita brunnea* of Gray with *Lacerta Leschenaultii*, M. Ed. They differ from each other in the character of the nasal plates.

5. *C. Jerdoni*, Bedd.

The characters of the nasal plates are again distinct from those of the other two species, being similar to those in *Eremias*. The three, however, appear to form a good genus.

6. **Ophiops [Gymnops] microlepis**, n. sg. and sp.

The new sub-genus *Gymnops*, is characterized by having the nostril between two swollen shields, one above, the other below, with a small post-nasal. There are no eyelids.

O. microlepis has the head shields smooth, not rugose, the anterior frontal single, post-frontals without any intervening plate, occipitals small, each nearly equal to the fourth part of a post-

occipital in size; chin shields, six or seven on each side, the first two or three pairs meeting; dorsal scales, minute, carinated; two large shields in front of the anus, the posterior the larger; tail, elongate, sub-quadrate in front, rounded behind, more than double the length of the body. Colour grey in the middle of the back, under-parts white, sides with two white lines, the upper much the longer, the lower not seen behind the shoulder, and with dark spots. Length, 7·2 inches, of which the tail is 5·1. A single specimen only found at Korba in Bilaspúr.

7. **Euprepes innotatus,** sp. nov.

Small, resembling *Euprepes macularius* in size and form, but with the centre of the lower eyelid transparent. Scales in 32 longitudinal series, those of the back and sides with five keels. Back olive, sides purplish brown, a white line running back on each side from the superciliary ridge to the middle of the back.

8. *E.* [*Tiliqua*] *carinatus,* (Schneid.) var. (*E. rufescens,* auct.) This species has usually five keels on the scales in India.

9. *E.* [*Tiliqua*] *macularius,* Blyth, var.

A variety is common in Chatisgarh, Chota-Nágpúr, &c. It appears probably different from *T. multicarinata,* Kuhl.

10. **E. [Tiliqua] septemlineatus,** sp. nov.

A small species, blackish brown in colour, above with seven white lines, three on the back, two on each side, under-parts, white; scales three-keeled, in thirty longitudinal rows; one specimen only about four inches long.

11. *Riopa Hardwickii,* Gray.

12. *R. albopunctata,* Gray.

13. *Hemidactylus maculatus?* Dum. et Bibron.

14. **H. gracilis,** sp. nov.

Near *H. reticulatus,* Bedd. It is small, slender in form, the body less depressed than is usual in the genus, back with elongate sub-trihedral tubercles, six inguinal pores, none beneath the thighs; tail, smooth, elongate, scarcely depressed at the base and not at all behind; colour, grey with dark spots forming bands on the back and dark lines on the sides and belly. Length three inches, of which the tail is 1¾. S. E. Berar and Ráipúr.

15. **H. marmoratus,** sp. nov. Back minutely granulate, a very

few small flat tubercles at the sides and loins, tail depressed, ringed with three elongate scale-like tubercles at the side of the hinder part of each ring, sub-caudal shields large. Femoral pores about twelve on each side with a considerable interval between them; all the fingers and toes with claws. Colour, grey above marbled with dusky, whitish below. Length of body, 1·85 inch, of tail (renewed in part) 1·5″.

16. *Calotes versicolor*, (Daud.).
17. *Sitana Pondiceriana*, Cuv.
18. *S. Deccanensis*, Jerd. Appears doubtfully distinct from the last.
19. *Charasia dorsalis*, Gray.
20. *Typhlops braminus*, (Daud.) var. *pammeces*.
21. *Tropidonotus quincunciatus*, Schleg.
22. *Ptyas mucusus*, (L.).
23. *Zamenis ? brachyurus*, Günther.
24. *Dendrophis picta*, (Gm.).
25. *Passerita mycterizans*, (L.).
26. *Lycodon aulicus*, (L.).
27. *Naja tripudians*, Merr.
28. *Bungarus cœruleus*, (Schneid.).
29. *Daboia Russellii*, (Shaw.).
30. *Rana cyanophlyctis*, Schneid.
31. *R. gracilis*, Wieg.
32. *Pyxicephalus breviceps*, (Schneid.).
33. *Callula pulchra*, Gray.
34. *Polypedates maculatus*, (Gray.).

5. *A fourth List of Bengal Algae,* determined by* Dr. G. v. Martens, *communicated by* S. Kurz, Esq.

(Continued from Proceedings for January, 1870.)

2662. *Dictyonema fuscescens*, Martens.—Filis heteromorphis, primariis ad $\frac{1}{300}$ lin. cum vagina crassis, obscure fuscis, articulis distinctis plerumque binatis, diametro æqualibus, vaginis rugosis, crassis, coloratis; filis secundariis $\frac{1}{600}$ lin. tantum crassis, pallidioribus,

* In this List the species which have been already published as occurring in Bengal, are omitted.

articulis subobsoletis viridescentibus.—Calcutta, natans in aqua stagnante horti botanici. January, 1870.

2663. *Oscillaria amphibia*, Ag.—Howrah District, very frequent, forming slippery layers of about $\frac{1}{8}$ lin. thickness on brick stairs leading to tanks, etc., also submerged or near the surface of the water.

2664. *Oscillaria Cortiana*, Menegh.—Howrah District, in tanks, etc. on the upper surface of waterplants.

2665. *Oedogonium scutatum*, Kg.—Howrah District, in tanks, on leaves of a species of *Cryptocoryne*. January, 1870.

2666. *Mastigonema granulatum*, Martens.—Filis fasciculatis, basi coalitis, diametro $\frac{1}{250}$ ad $\frac{1}{200}$ curvatis, sensim attenuatis, vaginis hyalinis arctis, articulis inferioribus diametro duplo brevioribus, pulchre granulatis, superioribus obsoletis fusco-ærugineis.—Howrah District, in tanks and slowly running waters, on the stems of plants, especially of grasses. January, 1870.

2667. *Lyngbya solitaris*, Kg.—Howrah District, frequent in tanks on dead or living plants.

2671. *Rivularia Lens*, Menegh.—Howrah District, very frequent in tanks on the leaves of *Vallisneria*.

2672. *Conferva bombycina*, *β. crassior*, Martens, articulis diametro ($\frac{1}{110}$ ad $\frac{1}{120}$ lin.) duplo ad quadruplum longioribus.—Calcutta, Botanic Gardens, in tanks. January, 1870.

2673. *Mastigonema caespitosum*, Kg.—Calcutta, Botanic Gardens, on dead submerged stems of *Sesbania paludosa*. January, 1870.

2674. *Leptothrix subtilissima*, Kg.—Howrah District, on moist walls of buildings. (Grows, for instance, on the damp walls in the Library Room of the Herbarium-building, Botanic Gardens.)

2675. *Scytonema Vieillardi*, Martens. Strato compacto nigro, filis subsimplicibus flexuosis acuminatis, cum vagina $\frac{1}{300}$ ad $\frac{1}{250}$ lin. crassis, ærugineis, vaginis luteis crassis.—Howrah District, on walls, especially of waterworks, very frequent.

X2. *Oscillaria limosa*, Ag.—Howrah, frequent in tanks. January, 1870.

2024. *Hypoglossum Bengalense*, Martens. Fronde tenui purpurea sesquilineam lata, alterne decomposito-pinnatifida, segmentis linearibus denticulatis, axillis acutis, denticulis obtusiusculis; costis

segmentis conformibus e multiplici serie cellularum elongatarum compositis, cellulis frondis sexangularibus $\frac{1}{60}$ lin. crassis; spermatiis in superficie sparsis.—Lower Bengal, Mutlah, tidal. December, 1868.

2026. *Rhizoclonium Antillarum*, Kg.—Lower Bengal, Mutlah, brackish water. December, 1868.

2687. *Fischeria tenuis*, Martens. Filis ramisque primariis subtorulosis tenuioribus, ramulis $\frac{1}{450}$ lin. crassis, acuminatis; articulis superioribus diametro duplo longioribus.—Calcutta, Botanic Gardens, on damp walls of the northern faces of buildings. Dull orange-coloured, when fresh. January, 1870.

Nearly allied to *Fischeria thermalis*, Schwabe, which grows on walls exposed to the hot vapours of hot springs, as, for instance, at Carlsbad, Bohemia.

2705. *Protococcus cohaerens*, Kg.* Calcutta, very common on walls of buildings, exposed to the weather. February, 1870.

2707. *Cladophora simpliciuscula*, Kg.—Hooghly river near Kidderpore, Calcutta, on old tidally submerged brickwalls. February, 1870.

2708. *Hypoglossum Lepricurii*, Kg.—Calcutta, occurring with the last.

2709. *Scytonema aureum*, Menegh.—Calcutta, on muddy banks of the Hooghly river at the Botanic Gardens. February, 1870.

2710. *Chthonoblastus salinus*, Kg.—Calcutta, Hooghly river near Kidderpore, on an old brickwalls. February, 1870.

2711. *Hormosiphon coriaceus*, Kg.—Hooghly river along the Botanic Gardens, Calcutta. February, 1870.

2712. *Conferva bombycina*, Kg.—Calcutta, Hooghly river near Kidderpore. February, 1870.

2713. *Oscillaria tenuis*, Lyngb.—Calcutta, Botanic Gardens, in tanks.

2714. *Oscillaria antliaria*, Martens.—Calcutta, on muddy banks of the Hooghly river, Botanic Gardens. February, 1870.

2715. *Oscillaria tenuis γ formosa*, Bory.—Calcutta, Botanic Gardens, in tanks.

* This Alga is very frequent in Bengal; hardly are the walls of buildings white-washed, when they again turn first green and then black, being covered by this *Protococcus*.

Gloeocapsa rupestris, β. pallida, Martens.—On walls in the Botanic Gardens, Calcutta. January, 1870.

1006-6. *Polysiphonia rufo-lanosa*, Harvey.—Calcutta, Botanic Gardens, on submerged branches occurring together with *Catenella Opuntia*, Grev, along the Hooghly river.

At the close of the meeting, Mr. N. A. Bellotty presented to the Society four Jynthia coins.

Bábu Pratápa Chandra Ghosha, Assistant Secretary, has since sent the following note regarding those coins.

"They are silver Jayanti coins. As usual, they bear no names of kings.

Area I.—শ্রীশ্রীশিবচরণ কমল মধুকরস্য

Of the Honey-worker of the lotus at the foot of the most glorious *Siva.*

Area II.—শ্রীশ্রীজয়ন্তী পুর পুরন্দরস্য শাকে ১৬৫৩

Of the illustrious sovereign of Jayanti-púra. *Sáke*, 1653 or A. D. 1741.

Area I, bears rude figures of a musket and a long knife and the *yantra.* On the top of the inscription in the margin is a half-moon, and below it a leaf, perhaps meant for that of the *Bel.* In Marsden's work (MCCXVI-MCCXVII) the coin is figured and described; but his date is 1683.

The second coin is a duplicate of the first. It bears an impression on the margin of a punched stag.

The other two are exactly alike. They are a little larger than the two above described, and the metal appears to be a little more alloyed.

The legends on both areas are identical with those of the above, excepting the date, which is 1712 *Saka*, or A. D. 1790. The margin, as in the above three coins, is decorated with a string of beads."

LIBRARY.

The following additions have been made to the Library since the last Meeting.

Presentations.

*** Names of Donors in Capitals.

Report of the thirty-eighth meeting of the British Association for the advancement of Science; held at Norwich in August 1868. —THE BRITISH ASSOCIATION.

Catalogue of Scientific Papers, Vols. II and III.—The Royal Society of London.

Philosophical Transactions, Vols. 158, 159, part I.—The Same.

Proceedings of the Royal Society, No. 119.—The Same.

Materials for a Fauna and Flora of Swansea and the neighbourhood, by L. W. Dillwyn, F. R. S.—The Same.

Proceedings of the Royal Physical Society of Edinburgh, for 1855-66.—The Royal Physical Society of Edinburgh.

The Transactions of the Linnean Society, Vol. XXVI, parts 2 and 3.—The Linnean Society of London.

Journal of the Linnean Society, Botany, Vol. X, parts 48 and 49, and Vol. XII, Zoology, Vol. X, parts 43-46.—The Same.

Proceedings of the Royal Institution of Great Britain, Vol. IV, parts V and VI.—The Royal Institution.

Annales des Sciences Physiques et Naturelles d'Agriculture et d'Industrie, 3e Série, Tome XI.—The Imperial Society of Agriculture, &c., of Lyon.

Actes de L'Académie Imperiale des Sciences, Belles-Lettres et Arts, de Bordeaux, 3e Série, 31e Année, 1er Trimestre.—The Imperial Academy of Bordeaux.

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PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL

FOR SEPTEMBER, 1870.

A meeting of the Society was held on Wednesday, the 7th instant, at 9 P. M.

The Hon'ble J. B. Phear, President, in the chair.

The minutes of the last meeting were read and confirmed.

Presentations were announced—

1. From the Chief Commissioner of Mysore, two copies of the classified Catalogue of Sanscrit MSS. in the Sarasvati Bhandáram, Mysore.

2. From Mons. L. Lafont,—A table showing the results of Meteorological Observations made in St. Xavier's College Observatory, during the first six months of 1870.

3. From the Author—A copy of Main Results of the Modern Vaidic Researches by R. Ghosha.

The following gentleman duly proposed and seconded at the last meeting, was balloted for and elected an Ordinary Member :—

R. F. St. A. St. John, Esq.

Captain J. Forsyth has intimated his desire to withdraw from the Society.

The following letters addressed to the Secretary were read :—

1. From A. O. Hume, Esq., C. S., Agra.

"In a former letter to you I have stated that *Cypselus tectorum*, Jerdon, of Major Godwin-Austen's list, which appeared at p. 91 of J. A. S. for 1870, was probably *C. infumatus*. I have now one or two more corrections to make to that list.

The bird described by Major Austen as *Rhyticeros plicatus*, Lath., is really the female of that species. The description given of the naked space on the throat settles this.

In the male *plicatus* the gular pouch is bright yellow; and in fact the bird mentioned by Major Austen as *Aceros?* sp. ind.

No. 146, b, is pretty clearly the male of *Rhyticeros plicatus.* Dr. Cantor states that in this species the male has the bill (greenish or yellowish) white, iris pale crimson, gular pouch rich gamboge yellow, feet blackish, while the female has the iris golden vandyke, eyelids brick colour, pouch dirty azure with two transverse black lines, &c.

The male *plicatus* has the medial part of the crown, the occiput and nape, a sort of rufous bay, the sides of the head and neck and front of the latter glistening white, more or less tinged with yellow.

The female has the head and neck black, and is smaller in size.

There can be no doubt, I believe, that Major Austen's No. 146*a.* and 146*b*, are female and male of the same species.

Then his No. 231*a*, *Anthreptes?* is unmistakeably *Chalcoparia Singalensis*, Gm., *Anthreptes phœnicotis*, Blyth, one of the very commonest of the *Nectariniidæ*, in Tippera, whence I have received very numerous specimens.

Major Austen says, he obtained two specimens of *Serilophus rubropygius*, one having a fine colour of shining white. One would almost suspect that this latter must be *S. lunatus*, Gould. I have had at least 20 specimens of each species before me, at one time or another, and so far as my experience goes, Gould is quite correct in saying that *rubropygius* is distinguished from *lunatus* (amongst other things) "by the almost total absence of the lunate mark on the sides of the neck," and again in stating that in *rubropygius* "the lunate mark on the sides of the neck is obsolete in some individuals, and is not very conspicuous at any time in the adult."

The specimen of the so-called *Ephialtes Lempigi* does, if correctly described, most certainly *not* belong to that species, which is *never*, *I* believe, *chestnut*. Temminck's Pl. Col. 99 is a very fair representation of *Lempigi*, which is doubtless often *rufous*, but always a brown and not a chestnut rufous. The wing also is too small. Probably, this specimen belonged to *E. Mautis*, Bon., a species which does occur in Burma, and which is generally confounded with *Lempigi*, although Bonaparte points out the leading distinctions clearly enough in the Conspectus.

Henicurus nigrifrons is of course nothing but the young of *Henicurus Scouleri*.

The *Carpophaga* species not determined, appears to be nothing but the immature, or female, *insignis*. In the old female, there is *never* much coppery gloss, and in the immature birds of both sexes and in some apparently adult females, thore is absolutely none. I have a female *insignis* from Tippera, which appears to correspond exactly with Major Austen's description, and I have little doubt, that this was what his birds were."

2. From Lieut. E. H. Steel, Dibrughar.

"During my stay in Assam, I have both had in my possession and seen various Celts which have been found in the hill ranges to the S. E. of Dibrughar. I think that perhaps sketches and descriptions of them might be of interest to the members of the Asiatic Society, and in this hope I am induced to send them to you.

No. 1, (pl. III.), is a Celt of Jade stone in the possession of W. Haly, Esq., and he procured it, I believe, from the Namsang Nagas. I sketched it some little time ago. The stone is of a greenish hue, somewhat mottled, and in parts presents the appearance of being rust-stained: the edge is perfect, and shews but little mark of having been used: it is larger by far than most of the Celts found in the same locality, and of a more symmetrical shape, and presents an appearance of high finish.

No. 2, (pl. IV.) is in the possession of Lieut. W. Barron, B. S. C., who kindly allowed me to copy it. It is far smaller than No. 1, and of a lighter green hue; in fact, looks a piece of pure jade stone. It bears marks of having been used, both on the edge and on the head.

No. 3, (pl. IV.) is of a very different shape, as will be seen by the sketch, and the stone is also of a very different character, being of a soft white friable substance, of a brownish yellow on the outside, in fact looks as if it had been calcined after its manufacture. I am unable to determine what stone it is.

Besides these three of which I send sketches, I had one in my own possession which I sent to England, and which Sir John Lubbock pronounced an undoubted Celt, but at the same time he regretted that it had not been found by some reliable person, *in situ;* this Celt was exactly similar in shape and size to Lieut. Barron's, and of the same hued jade.

All of these Celts were found among the Namsang Nagas, a tribe to the S. E. of our frontier station of Typore.

I read some time ago in the Society's Journal that in Burma specimens of the sort marked 1 are considered spurious and *dead*, and those of No. 3 authentic. Exactly the reverse opinion obtains up here among the Nagas: No. 1 is a *live* stone; No. 3 a *dead*.

I have seen an exceedingly fine collection of Celts from the Danish shell mounds; they all seemed highly finished like the celts found here, and I see no reason why these latter may not also be considered genuine.

I also hardly think it possible that the Nagas would manufacture objects they hold in such awe merely for sale, especially as they are so unwilling to part with the few specimens that they possess."

Mr. Ball said—

"The Assam Jade Celt to which Lt. Steel alludes was described by Sir John Lubbock, in the *Athenæum* for June 22nd, 1867.

"There is at present in the Geological Museum an implement made of soft shale, which was brought from Assam by Mr. Medlicott. (Proc. A. S. B., Sept. 1867, p. 152).

"I take this as a favourable opportunity for making a few remarks on stone implements which have been discovered in Singhbhúm. In July, 1868, I exhibited to the Society some chert flakes, and at the same time read a communication from Capt. Beeching of the 10th M. N. I. which described their mode of occurrence near Chaibassa and Chukerdharpur in the Singhbhúm district. Since that time, I have visited the localities and obtained what I believe to be strong evidence of the human origin of the flakes. Those at Chukerdharpur must have been transported at least three miles as the nearest source of the material of which they are made is situated at that distance. It is difficult to believe from the nature of the case, that the transporting force can have been other than human.

"Besides these flakes which I found in many parts of Singhbhúm, I have been fortunate in discovering a beautifully made Celt, which I now exhibit, in another part of Chota-Nágpúr. It lay on the surface at the foot of a small hill near the village of Buradih, S. E. of Gomaria in Iamar. It is, I think, the best-formed weapon yet obtained in S. W. or Lower Bengal."

Col. Hyde then made the following observations on the effect produced by a thunder storm on a self-registering indicator—

"While testing the qualities of the coal from the Raneegunge field, I wished to ascertain the amount of draught in the chimney in use, and the regularity with which it was maintained.

"For this purpose an ordinary self-recording indicator was constructed, and fixed as follows.

"At the floor line of the Mint, a hole was bored into the chimney from the Engine room; in this hole an iron tube one inch internal diameter and six feet four inches long was carefully set in mortar. The tube projected three inches into the chimney and left sufficient outside for the convenient fixing of the indicator. On the outside end of the tube was fixed a tap $\frac{5}{8}$ inch bore, and this was connected by means of an air tight junction with one stem of a tube of U form, fixed in a block of wood, so that it might stand upright.

"The diameter of this U tube was $2\frac{3}{16}$ inches, and it was filled about half way up with water. Thus one stem of the U tube is open to the inside of the chimney, while the other is open to the room in which it is fixed.

"Within the stem that is open to the room is placed a light copper ball float, which sits on the surface of the water, and follows the oscillation of the water. A thread is attached to this float, and from it passes over a small wheel to a pencil that is free to travel on the line of the axis of a cylinder driven by a clock, after the manner of an ordinary indicator, (*Vide* Pl. V., diagram No. 3,) so that any motion in the water in the U tube will be truly indicated by a line drawn on the paper of the revolving cylinder.

"On the top of the stem of the U tube that opens to the chimney and in the junction is placed a small screw, so that by closing the tap and opening this screw, both stems of the U tube can be opened to the room, and the water in both stems brought to a level. With the float in this condition the cylinder is turned round, and an equilibrium atmospheric line is traced on the paper. The tap is then opened to the chimney, and the screw closed; after which any diminution of pressure consequent on the current within the chimney is indicated in amount and duration on the paper.

"It will be seen that the fall of the float and the diagram No. 1

drawn on the paper only indicates half the total disturbance, *i. e.* half the difference between the pressure of the atmosphere outside and inside the chimney, so that when it is desired to give a diagram showing the true difference, it is necessary to double the vertical scale as has been done in diagram No. 2.

"This indicator was at work on the 5th August last. At 5 minutes past 2 P. M., a small but severe thunder storm passed directly over the Mint, and two remarkable flashes of lightning occurred, one following almost immediately after the other. There was loud thunder.

"When the diagram was examined, it was found that a very marked diminution of pressure had been indicated, as having occurred in the chimney at 2-5 P. M., the time of the thunderstorm.

"The diagram, with an enlargement to shew in tenths of an inch the actual amount of disturbance, is given. It will be seen that two distinct falls in pressure in the chimney are indicated, and that after the disturbance had ceased, the pressure within the chimney remained somewhat less than it was before the storm.

"The height of the chimney is 80 feet and the inside diameter 5 feet."

The President said that, assuming the phenomenon described by Col. Hyde to be attributable to the passage of the thunder storm, one explanation only occurred to him. The storm was distinguished by a thunder clap, which caused the windows of houses to rattle. He thought it possible that the concussion thus apparently produced by the impact of the sound wave might have a very appreciable effect upon the barometrical column. Col. Hyde's apparatus measured the difference between the simultaneous atmospheric pressures on the two legs of the indicator, inside the chimney and outside the chimney, respectively, and it was obvious that the sound wave would travel more slowly through the heated and rarified air of the chimney than through the outside air: therefore the outside leg would be affected by the concussion before the inside leg. He pointed out that if this happened, the consequence would be just such a disturbance in the uniformity of the diagram drawn by the self-acting register, as Col. Hyde had exhibited. He had not the data relative to the actual pressures, temperatures, densities, and

the height of the chimney, requisite to a calculation of the amount of the disturbance upon this basis; but he admitted that he did not think the amount which would result from such a calculation would be nearly so large as that in the diagram. The explanation was, therefore, no doubt insufficient.

Col. Hyde said—"Some time since, I observed the water in the open stem of the U tube oscillating, thinking that this might, perhaps, be due to the concussion of the atmosphere in the room, where two powerful air pumps, driven by a 30 H. P. Engine were delivering air, I made a careful experiment, by closing the open mouth of the U tube, so as to leave only a very small hole open to the room. There was not the slightest alteration in the oscillations, and it was evident that these oscillations were unaffected by the air pumps, and were solely caused by the action of the chimney draught. It would seem also that the length 6′-4″ of tube 1″ diameter, and the contraction caused by the ⅜ tap would effectually negative the supposition of any sudden motion (such as is indicated in the diagram) being given to the water in the U tube by concussive action on the open stem, and the diagram I think clearly indicates a diminution of pressure within the chimney in relation to the pressure in the room at the base.

"The most probable cause seems to be a sudden local diminution in the temperature of the storm space or cloud passing over the top of the chimney. The duration of the disturbance within the chimney is about three minutes as shewn by the time lines, and the extent of the disturbance amounts to ⅜ of an inch in diminution of pressure.

"The diagram indicates an occurrence that caused a sudden increase in the velocity of the current up the chimney, a recurrence, and then a return to nearly the original condition, and its shape, I think, shews an exhausting action through a contracted orifice.

"I have not any record of the temperature or of the reading of the barometer at the time of the storm; but the height of barometer and the temperature of the air and of the inside of the chimney were recorded at 1.38 and at 2.38 P. M. as follows :—

1.38 P. M. Barometer, 29.74, air temp. 86, chimney temp. 220.

2.38 P. M. ,, 29.72, ,, 84, ,, 245."

The following papers were read—

I.—*Note on Three Species of Batrachia from Moulmein,—by* DR. F. STOLICZKA.

[Received and read 7th Sept., 1870.]

The two known species of *Oxyglossus*, and one new of *Ixalus*, have been lately obtained, in the same locality, by Mr. W. Theobald on the Ataran river, east of Moulmein (Tenasserim Province). Both genera characterize the Malay fauna. The discovery of the *Oxyglossi* is particularly interesting in point of geographical distribution.

O. lævis has up to this only been recorded from the Philippines and is stated by Günther to be "confined" to these islands.

O. lima occurs in Java, China, Camboja and Siam, and is said to have also been found in Bengal. The last locality was considered doubtful, but, through the discovery of the species at Moulmein, it receives more probability, though specimens in our neighbourhood must be of extreme rarity. They are not represented in any of our collections, while *O. lævis* is.

The discovery of the *Oxyglossi* so far north is further interesting in connection with the fossil species, *O. pusillus*, which I have described from the upper tertiary frog-beds of Bombay, (vide Mem. Geol. Survey of India, vol. vi, part III, p. 387). And, since I had the opportunity of examining the two recent species, I am confident that the generic determination of the fossil one is correct. This fact, though as yet almost single, clearly indicates that the Malabar coast had its Malayan fauna,—which is so considerably different from that of Central India,—already at an earlier period than the present one. It remains to be shown, how far this observation will be supported by the study of the fauna of the upper tertiary deposits of the Indian Peninsula. Good materials for this are, however, as yet a desideratum. Every fragment of a bone and every shell must be collected and carefully examined, before we can speak with any confidence on this important subject.

The genus *Ixalus* includes a number of small tree-frogs without vomerine teeth. The species chiefly occur in Ceylon, South India (Nilgheris) and the islands of the Philippine and Indo-Malayan Archipelago, but none have as yet been reported as far North as Moulmein.

Oxyglossus lævis, Günther.

Batrachia salient. Brit. Mus., p. 7, pl. I, fig. A.

A small specimen, the body measuring $1\frac{1}{8}$ inch, which length is equal to the distance between the anus and metatarsal tubercle; the 4th toe is half an inch long; tympanum very indistinct, smaller than the eye. Skin with a few scattered tubercles, more numerous posteriorly, laterally between fore and hind-limbs conspicuously extended. Color above, pale vinaceous, or ashy brown, lighter on the limbs, all over with darker fine marblings and spots; a somewhat indistinct very narrow band between the eyes, which are very prominent; upper lip spotted with white; a short, thin flexuous fold extends from the upper edge of the eye to the shoulder; another much less distinct short fold crosses obliquely the angle of the mouth and is white. Below, yellowish white, on chin and throat marbled and reticulated with dusky, farther on uniform white, with little tubercles, these becoming most distinct on the median hinder side of the femora. There is a distinct fold of the skin on the inner side of the lower two-thirds of the tarsus, and a very thin fold also on the fifth toe, which Günther does not notice.

Four specimens of this species exist in the Asiatic Society's collections. They are about equal in size to the Moulmein specimen and quite similar to it in coloration; all without a pale median dorsal streak. Very probably they are also from Burma. All the specimens agree in their structural characters so perfectly with Günther's description and figure, that there can be hardly any doubt as to the identity of both, but the Burmese form appears to be constantly smaller than the Philippine one.

Oxyglossus lima, Tschudi. Var.

Günther, Reptiles of India, p. 401. Dum. and Bibron, VIII, Erpetologie gen., vol. p. 334.

Body, above, covered with small, sub-equal, pointed tubercles, obsolete on the front part of the head; below, with numerous interspersed large tubercles of which two longitudinal rows on the middle of the chin and throat are especially conspicuous on account of their regularity; the large tubercles do not extend on the loins, but are very marked on the lower belly. Snout short,

rounded, with the nostrils swollen and oblique, directed upwards; eyes large prominent; tympanum quite indistinct, a thin fold runs from the upper edge of the eye to the shoulder; no distinct fold on the side of the body, which measures $1\frac{1}{16}$ inch, the length being very nearly equal to the distance between the anus and the inner metatarsal tubercle; length of 4th toe very nearly half inch; total length of hind limb $1\frac{9}{16}$ inches. Fingers thin, free and elongated; toes entirely webbed up to the tip; metatarsus with two tubercles, the inner considerably larger (but not as large as in *O. lævis*), than the outer, the former being laterally compressed with an obtuse edge, the latter tubercular and pointed. The tarsus has on the upper hinder end a small tubercle, and on the side of the lower inner half a thin fold; this and the other tubercles are yellowish. Tongue moderately narrow, elongated, terminating posteriorly in a long point.

Greenish brown above, some of the slightly enlarged tubercles being black and forming, especially on the limbs, small irregular dark spots, a pale median dorsal streak, an other much less distinct on each side of the middle portion of the body; lower eyelid and a short streak above the arm yellow; the thin fold behind the eye and the fore limb in front blackish brown; each femur behind with three dark longitudinal bands, separated by two light coloured ones, the upper one of these is very narrow and yellowish, the lower much broader and with a distinct orange tinge, the lowest dark band is purer black than the two upper ones; hinder side of tarsus blackish, this color continuing on the fifth and the adjoining toe; extreme edge of upper lip pale. Below, yellowish white with two sub-parallel longitudinal brown bands, extending from the midle of the lower lip to the belly, the sides of the body and the front side of the femora uniform pale yellow; hind-limbs greenish pale brown, finely marbled and punctated with darker brown and with two somewhat irregular brown spots in the bent between the belly and the femora.

Although differing in some points from Günther's description, it is most probable that the specimen which I have just described, does not differ specifically from *O. lima*, at least there is no sufficient ground for a specific separation from the materials before me.

Günther does not state all the details of coloration which I have given, his specimens in spirit did probably not shew them sufficiently clearly, but in the principal points, the coloration of the fresh Moulmein specimen well agrees with his account, and so does also the general structure of the body.

IXALUS CINERASCENS, n. sp.

Body, small, stoutish, moderately depressed, above with a few scattered tubercles, below on chin and throat smooth, on the belly, and the lower side of the femora, very densely and coarsely tuberculated, the tubercles being flattened and more or less distinctly polyhedral. Snout, short, obtuse, shorter than eye, but equal to the length of the exposed pupil, or to the distance between the eyes which are very prominent; nostrils rounded, very slightly swollen and somewhat laterally placed below the indistinct canthus rostralis; tympanum quite indistinct; a fold runs from the upper eyelid posteriorly to the shoulder. Length of body $\frac{11}{16}$ of an inch, slightly shorter than the femur and tibia together; total length of hind limb $1\frac{3}{16}$ inches, length of fourth toe not quite $\frac{5}{16}$ inch. Fingers, quite free, elongated with well developed swollen discs, which are only slightly smaller than those on the toes, the latter being barely half webbed; metatarsus with a small inner tubercle and a very indistinct one at the base of the fourth toe; no fold on the tarsus. Tongue broadly oval, distinctly notched behind; eustachian openings small and very wide apart.

Color—above, olive ashy, very minutely freckled with dark, paling at the sides; a broadish somewhat indistinct band between the eyes, one irregular band on each side of the back—in one specimen represented by a mere elongated spot, three bands across the lower arm and a few spots on the fingers, three cross-bands across each femur and tibia, the middle band being in each case broadest and most distinct; a spot on the knee, a few small spots on the tarsi and toes, and a large spot round the anus are dark ashy, often encircled with a more conspicuous enlarged black line; shoulder fold, a few small spots on the lips, one spot on the side of the posterior belly, followed, and partially, encircled, by a silvery yellow tinge, the inner basal half of the femora and,

to a great extent, also their hinder side, and the toes internally are blackish. Below, pale brownish white, somewhat purer on chin and throat, and all over finely speckled and punctated with dark.

The specimens examined appear to be quite full grown; the largest measures only ¾ of an inch. The structure and coloration are peculiar, and distinguish the present species from any as yet known from the Philippines, Ceylon, or South India.

II.—*On the Method of assaying silver as conducted in the Indian Mint.*—*By* DR. H. E. BUSTEED, OFFG. ASSAY MASTER. (Abstract.)

The method of assaying Silver, as now in use in H. M.'s Indian Mints is one peculiar to them; it was introduced into the Calcutta Mint about the year 1850, and thence extended in course of time to those of Bombay and Madras.

It has been favorably reported on and described more or less in detail as an official duty by various assay officers, to local Mint authorities in India, but beyond this, it would appear, that no attempt has been made towards giving publicity to the practical working of the process, or to making generally known the laboratory details of this method of assay.

It has been suggested to the writer that some such attempt now would be not only interesting but useful, as after 20 years' experience of it, the assay offices in the Indian Mint must be in a position to assign its true value to a method which has been used for the assay of an immense importation and coinage of silver bullion. To render it more generally intelligible, and to show wherein the process about to be explained contrasted with those in more general use, Dr. Busteed very briefly adverted to the principles on which those processes depend for their results, omitting details and technicalities. In modern acceptance, the principal duty of an assayer is to ascertain the proportion of the precious metals present in any sample of mixed metal submitted to him for examination, so that from the result of his investigation, the proper value may be assigned by calculation to the mass which the sample is supposed to represent.

This the assayer effects by separation of the precious metals from the coarser ones. The most ancient means of effecting this was, by

the method of *cupellation.* He explained the principle of this method, what skill and experience it required on the part of the operator, and how it still fell short of accuracy in its results.

Its shortcomings led to the invention of another process by Gay Lussac, known as the volumetric, or humid, method, which is much more accurate, and is now practised very generally on the Continent. Its principles were briefly glanced at. Its introduction, however, into the Indian Mints was not considered desirable by their assay officer, for certain reasons, a few of which were given. The method of cupellation, therefore, being not accurate enough for the purposes of buying and selling bullion, and that by the French process being considered not well suited to Indian Mints, it became necessary to look out for, and introduce into the Mints of this country, a process more likely to answer all the ends in view.

This object was attained by the adaptation and introduction of the process now in use, *viz.*, the "Chloride process of assaying silver." Hitherto it had never been resorted to, except on a very small scale. Assayers appear to have shrunk from the manifest difficulties of manipulation in collecting, drying, and weighing the precipitated chloride of silver. The credit is due to Mr. James Dodd, a former Assay Master of the Calcutta Mint, of having so simplified, modified, and systematized the details of this method, as to render its application to the assaying of silver on a large scale easy and accurate. The principles and an outline of the details of the process were then given, an understanding of some of the chief appliances and steps in the manipulations being assisted to by suitable photographs. The system of weights in use and the quantity of the sample taken for assay were also explained, as well as the points wherein this system might fairly be considered better suited to a Mint in India than the other methods.

In conclusion, Dr. B. alluded to the vast amount of silver bullion which this process enabled the assay officers of the Indian Mints to deal with confidently and accurately, during the past 15 years. In one year alone, that of 1865-66, the importation of silver bullion reached to the immense amount of over 14 millions sterling,—so putting to a crucial test the system of assay used for its valuation.

III.—*The Vástu Yága and its bearings upon Tree and Serpent-worship in India.*—*By* Babu Pratápachandra Ghosha, B. A.

(Abstract.)

The Vástu Yága and various other forms of Serpent and Tree-worship are traceable as much to a feeling of fear as to other causes. It is evidently a sacrifice, invented by the ancient Aryan conquerors with a view to propitiate the aborigines or primeval owners of the land. Vástu is the principal god, and though the aborigines themselves are not worshipped by name, the Nága is no doubt the ostensible object of worship. The several gods, properly *pitris* (ancestors, predecessors, former owners) that occupy the several *maṇḍalas*, are also the names of Nagas. The Vástu is the God Earth, quite distinct from Dhará (Terra) and in the prayer he is represented as the supporter of the world.

The Vástu Yága, therefore, appears to be a memorial of the foundation of the new Aryan home and of the Nágas, a powerful race of aborigines. In the ceremony for dedicating a tank, a stick is planted on its banks. This stick is the *Nága-yashti*, or the Nága-pole. The application of the term Nága to the reptile class is without doubt of comparatively recent date, and since that time may be noted the double meaning of the word applied to the Nága aborigines as well as to the Nága serpents. Ananta is worshipped not as a snake, but as a form of Vishṇu. It literally means eternity. The *Anantachaturdas'i*, *Nágapanchami*, and such other minor vratas, though connected with the Nágas, have nothing to do with the actual reptile.

The aborigines of India bore a peculiar relationship to the first Aryan settlers. Many of the aborigines were held in high estimation, and in a legend the goddess Saras'vati is described as imparting the art of music to two of the Nágas (*Kamvala* and *As'vatara*,) and the name of Karkotaka, another Nága, is enjoined to be uttered every morning. There are again several fruits, trees, and things which are named after the Nágas, and these are all derived from the N. E. frontiers of India.

From the above, it would appear that the Nágas as a race of powerful aborigines were respected for their prowess and also hated for

their barbarous habits. The eminent among them were soon identified with some Hindu gods, and ultimately the Nágas, as a race, became a class of gods. Serpent-worship, in the true sense of a creature-worship, was never prevalent in India, and though, under peculiar circumstances, this worship may be seen at the present day among the several hill tribes, still such a practice does not obtain among the Aryans. The serpent, as an emblem of eternity, is respected, but it is the worship of Vishṇu and not of the reptile. Serpents have crept into our mythological legends, but in whatever form they appear, they are put down as enemies of Vishṇu. Ráhu is darkness, and its stellar form is a snake. Sun = Hari = Vishṇu, the destroyer of Ráhu, the first destroys as darkness, the second as snake, and the third as death.

Figures of Nágas occur in sculptured stones, but only for ornamentation.

Several trees are described in later Puránas as forms of Vishṇu and other gods, but they are cherished with a degree of care because of their extreme usefulness in the tropical country. For instance, *Tulsi* as an aromatic herb, the *Durvá* as a fodder on which the cattle live, the religious fig tree as offering cool shelter, the cocoanut as a refreshing fruit. Some trees again are noted as obnoxious when planted near dwelling houses, because in a Hindu hygienic point of view, they are considered injurious to health. The papaya plant is one of those that no Hindu would like to have near his house.

IV.—*Analysis of a new Mineral from Burmah.—By* D. Waldie, Esq.

During the period extending from November, 1863, to the end of 1864, I had various samples of metallic ores sent to me for analysis by Mr. O'Riley, the Deputy Commissioner of Martaban, Burmah. They were mostly samples of Galena, but one of a different kind particularly attracted my attention as of rather unusual composition, so that I suggested to him, that it might be desirable to publish it. To this proposal he assented, suggesting that it should be presented to the Journal of the Society. Circumstances at the time prevented me from carrying my proposal into effect, but recently I resumed the investigation which had been lying long incomplete.

The analysis of the sample first sent by him on 24th July having been unsatisfactory on one point, and the specimen having been exhausted, I wrote to Mr. O'Riley for another sample, in order to settle this point. In reply he said that he had only a small specimen left, but sent me another small piece from the same range of hills, bearing a strong resemblance to the first, which he thought might probably be the same. I have no information of the locality whence they were got: Mr. O'Riley's letters were all dated from Shoaygyeen, except one in February 1864, from the Karen country. In a subsequent letter, he mentioned that the samples referred to were from the same range of hills as a sample of ore he was then sending me, which turned out to be a double sulphide of copper and iron. This is all the information I can give of their source, as some time afterwards Mr. O'Riley died.

The following is the result of my analysis of the first sample sent on 24th July.

Copper,	17·000
Silver,	·096
Iron,	36·470
Antimony,	1·150
Arsenic,	32·700
Sulphur,	1·360
Deficiency and loss,	10·624
Earthy matter,	·560
Total,	100·000

The silver is equal to 31½ ounces, troy, per ton.

The unsatisfactory point which I wished to clear up was the deficiency of 10·624, which I supposed might be oxygen combined with the metals. But this did not appear a very probable solution of the difficulty, and it might rather be owing to errors in analysis. The determinations had all been carefully made according to the usual methods. The arsenic and antimony were separated from the other metals by Hydrosulphate of Soda, and the arsenic determined as Arsenate of Magnesia and Ammonia, and there was no reason to doubt the correctness of the process. But I had some fear that arsenic might have been lost during the operations preparatory to

its separation from the other metals, and an experiment made on the second sample by conducting the analysis in the same way gave support to this view, as by this plan only 31·5 per cent. of arsenic was obtained, instead of the 37 per cent. indicated below by another process. Probably arsenic had been volatilised as chloride.

The second sample sent by Mr. O'Riley, 11th October, was similar in appearance to the first, but differed somewhat in composition, as will be seen presently. No particular note had been taken of the physical properties of the first sample. The second one was in the form of a flattened piece about $\frac{5}{8}$th of an inch (or 1·2 centimetres) thick, with a dull, blackish, earthy looking surface. When broken, it presented an uneven fracture of a laminated structure, somewhat cellular, of a steel grey colour with a purplish tint and metallic lustre. In general appearance it is like mispickel, but of a redder shade. Minute specks of brownish green matter could be seen here and there on the surface, particularly between the lamellæ, when these presented themselves to view edgeways. It gives no streak on paper but a dark grey one on unglazed porcelain. Hardness, 5·5.

Specific gravity at 81° F. (27° C.)

In small pieces, 7·343

In powder, 7·428

The pieces were boiled in the bottle, but no doubt still retained air in some interior cells.

It is easily soluble in Nitric and Nitro-Hydrochloric acids with evolution of Nitrous fumes. One portion was dissolved slowly by diluted Nitric acid containing 3 per cent. its volume of Nitric acid of 1400 and the solution completed somewhat more rapidly by a solution containing 5 per cent. its volume. Hydrochloric acid at atmospheric temperature dissolved it partially by standing some time (two or three days,) to the extent of about 10 or 11 per cent., and by repeated boiling about 13 per cent. more, but there appeared no definite limit to the action. Acetic acid dissolves a portion, evidently oxidised matter.

Ignited in a platinum crucible it caked together, lost its metallic lustre and became of a brownish colour, but whitish at the edges where it adhered to the crucible and was removed with some diffi-

culty, having slightly attacked the platinum. By this ignition, it increased nearly 2 per cent. in weight. Ignited in a small glass tube by the blow-pipe till the glass softened, it did not appear to yield any arsenic.

In the analysis of this sample, the arsenic (with a little antimony) was separated from the other metals by fusing with Nitrate of Potash, and Carbonate of Soda (Potassium Nitrate and Sodium Carbonate,) or by passing Chlorine into the mineral mixed with solution of Potash. As in this case, however, the action was very slow, the mineral was first oxidised by a little nitric acid, then mixed with solution of Potash in excess and Chlorine passed through it. This plan answered very well. The results of two analysis for the three principal constituents, agreeing very well, were as follows :—

Copper,	13·28
Iron,	43·88
Arsenic,	37·03

A complete analysis was made by digesting a portion for about twelve hours with diluted Hydrochloric acid and thus removing the oxidized matters. The results were as follows.

Soluble in Hydrochloric acid, dilute.		
Oxide of Copper,	1.21	
Protoxide of Iron,	1.97	
Oxide of Lead,	1.89	
Arsenious Acid.	1.12	
		6.19
Insoluble.		
Copper,	12.13	
Iron,	42.12	
Arsenic,	38.45	
Antimony,	.54	
Earthy Matters,	.12	
		93.36
		99.55
Loss,		.45
		100.

In one small piece I found 2. 67 per cent. of matters insoluble in nitro-muriatic acid, but generally it was very small.

It will be observed that this sample differs from the first in the smaller proportion of what may be considered accidental constituents, and is a purer specimen of the essential constituents, arsenic, iron, and copper. The inside pieces contained no sulphur: the outside crust yielded a trace probably in the state of earthy sulphate. And while the first sample contained a notable quantity of silver, this did not appear to contain any, or at least so little that I could not detect it in the amount of material at my disposal. The quantity of antimony was also less than half that of the first sample.

I have not been able to find in any book on Mineralogy I have had access to a description of such a mineral. The nearest are Arsenical Iron Pyrites (Mispickel) and Axotomous Arsenical Iron. But it differs from the former in the total absence of Sulphur, and from both in the presence of a considerable quantity of Copper, as well as in the larger proportion of Iron; and it differs still more in the proportion of the two basic metals together to the Arsenic, the latter being small in proportion to the former.

The constituents approximate, though not very closely, to 2 equivalents of Arsenic, 6 of Iron and 1 of Copper; rather more than 6 of iron and less than 1 of copper. This can scarcely be reduced to any probable atomic formula; but if the proper metallic nature of Arsenic be admitted it may be considered as an alloy, and alloys are not limited in their composition to definite formulæ. The excess of basic metals in its composition gives it a fixity under the action of heat not very usual in arsenides or unoxidised arsenical compounds.

I would venture to propose for this mineral the name of O'Rileyite in honor of the gentleman who sent it to me, whose services have unfortunately been lost to the Indian Government by an untimely death. This notice may perhaps lead explorers of these districts to discover additional specimens of this or analogous minerals.

V.—*Notes on Charaka Sanhitá.*—*By* DR. MAHENDRA LAL SIRCAR.

(Abstract.)

Charaka Sanhitá has not yet been examined by scholars either of Europe or America. The account of Charaka in Bœhtlinck and Roth's Dictionary publishing at St. Petersberg is taken from the *Sabdakalpadruma*, in which we have a fabulous account of the author, taken from *Bhaba Prakasa*, a very modern work on Medicine.

It appears, there is a MS. in Wilson's Collection, about which Dr. Roth writes to Mr. Hœrnle, Professor, Jayanáráyan College, Benares, as I learn from a letter from the former to Bábu Rájendra Lála Mitra, who did me the honor of referring to me on the subject, and very kindly sent me Mr. H.'s letter to him.

According to Dr. Roth, there are 11 parts or sections in the Charaka of Wilson's Collection, which are called *Sthánas.*

Now in the MSS. in my possession, one of which is a careful transcript from a very old and reliable MS. in possession of one of the Kavirájas of Berhampore, made (purposely for myself) under the order of the late Rájá Prasanna Náráyana Deva Báhádur, as well as in other MSS. in possession of other Kavirájas, which I have seen, there are eight parts or sections or *Sthánas.* Dr. Wise, the only European writer who gives any correct account of Charaka, mentions only eight parts or *Sthánas*, the names of which exactly correspond with those in our MSS. Besides, the additional parts mentioned by Dr. Roth are but *adhyáyas* of one or other of the eight Sthánas.

All our MSS. thus agreeing, I conclude, the original Charaka Sanhitá consists of eight Sthánas or Sections. The following list shows the names of these sections, and the number of the chapters or adhyáyas they severally contain :—

१ सुत्रस्थानं	...	...	...	३०	अध्यायानि ।
२ निदानस्थानं	...	...	...	८	,,
३ विमानस्थानं	...	...	...	८	,,
४ शारीरस्थानं	...	...	...	८	,,
५ इन्द्रियस्थानं	...	...	...	१२	,,
६ चिकित्सास्थानं	...	...	...	३०	,,
७ कल्पस्थानं	...	...	...	१२	,,
८ सिद्धिस्थानं	...	...	...	१२	,,

Charaka is not the original author of the work which goes by his name. That author was Agnivesha, who, along with five other rishis, Bhela, Jatukarna, Parásara, Hárita, and Ksháripáni, received instruction from Bharádvája, who himself was taught by Indra. Indra had received the science from the twins Ashvini Kumáras; Ashini Kumáras from Prajápati, to whom the science (Áyurveda) was revealed by Brahma, the supreme creator.

But Charaka does not pretend to the authorship of the work. At the end of every sthána, nay at the end of each Chapter or Adhyáya, we have the admission:

अग्निवेशकृते तन्त्रे चरकप्रतिसंस्कृते।

from which it appears that he gives the authorship to Agnivesha, and takes credit to himself only for revision and correction.

In the fabulous account of Charaka in Bhabaprakasha, quoted in Rájá Rádhá Kánta's *Sabdakalpadruma*, and alluded to above, he is said to have compiled from the works of the six disciples of Bharadvaju. This is very probable, but he does not say so himself.

As to the antiquity of the work, it is impossible to fix the date when it flowed from the lips of Átreya, or issued from the pen of Agnivesha, and when it was revised and edited by Charaka. All that we can say, at the present stage of our inquiry, is, that it seems to us to be anterior to Sushruta, the only other ancient Hindu work on medicine extant. Sushruta calls himself the son of Vishvá Mitra, who was the contemporary of Ráma, and claims to have derived his knowledge of medicine from Dhanwantari. Now, Dhanwantari is a mythological personage, but the Dhanwantari from whom Sushruta received instruction in Áyurveda was he who was called Dibodása and was king of Kási, which is now our modern Benares. It is singular that neither of these works makes any allusion to the other. Both make Áyurveda of divine origin, and they agree in tracing this origin from above downwards as far as Indra. But after that they diverge. Charaka, as we have seen, makes Bharadvája derive his knowledge from Indra, whereas Sushruta makes it Dhanwantari. We are inclined to think Sushruta to be a later work, inasmuch as his preceptor is a later personage than Bharadvája.

Besides the above, we have other grounds for believing Sushruta to be a later work. Though not so full and copious, it is more

systematic and more logical in its classifications than Charaka. It is more precise and accurate in its anatomy. Sushruta does not make any mention of beef as an article of diet, which Charaka does. Hence, Sushruta could not have flourished at an age when beef was still an article of food. Again, both Bagbhatta, and Misrabhava, the author of Bhabaprakasha, by far the most ancient of the modern class of medical writers, both these authors, we say, agree in giving priority and superiority to A'treya (or Bharadvája), the preceptor of Agnivesha, the author of the work which now goes by the name of Charaka.

Hence, if we take Sushruta to have flourished about the time of Ráma, the illustrious contemporary of his father Vishvá Mitra, we must claim for Charaka a date anterior to that of Sushruta.

But Charaka could not have flourished in the pre-Pauránic age, inasmuch as Indra is called in the work, वलचंतारं (the slayer of a demon called Bala, mentioned only in some of the Puránas).

Such being the antiquity of Charaka Sanhitá, it must possess very unusual interest, not only for the historian of medicine, but no less for the philologist and the historian in general, and the philosopher. As for its value in a medical point of view, this is not the place to dilate upon it. This much, however, I must say, that its pathology apart, I have found it to contain excellent and sound remarks on therapeutics, dietetics, and hygiene.

The history of any period should now be deemed incomplete, unless we had an insight into the nature of the diseases which prevailed in that period. In this point of view, we have no doubt, the study of Charaka would throw much light on the history of the time in which it was written. From it, we shall be able, in a great measure, to decypher the mental characteristics, the various occupations, the mode of living, and various other circumstances, connected with life and its preservation which prevailed in that age.

The receipt of the following communications was announced—

1. *Descriptions of New Land Shells from the Shan States and Pegu.—By* W. THEOBALD, ESQ.

2. *On the Land Shells of Bourbon with descriptions of new species.—By* G. NEVILL, ESQ., C. M. R. S.

3. *Descriptions of new species of Mollusca from Ceylon.—By* MESSRS. G. and H. NEVILL.

Library.

The following additions have been made to the Library since the last meeting :—

Presentations.

*** Names of Donors in Capitals.

Tillæg til Aarboger for Nordisk Oldkyndighed og Historie. Aargang, 1866, 1867.—The Royal Society of Northern Antiquities, Copenhagen.

Aarboger for Nordisk Oldkydighed og Historie, udgivne af det Kongelige Nordiske Oldskrift-Selskab, 1866, 1867, 1868.—The same.

Mémoires de la Société Royale des Antiquaries du Nord, 1866, 1867.—The same.

Bijdragen tot de Taal-land-en Volkenkunde van Nederlandsch Indie, 4th vol., 3rd part.—The Royal Instit. of Netherland India.

Journal Asiatique, Nos. 55, 56.—The Asiatic Society of Paris.

Bulletin de la Société de Geographie. April and May, 1870.—The Geographical Society of Paris.

Proceedings of the Royal Society, Vol. XVIII, No. 120.—The Royal Society of London.

Proceedings of the Royal Geographical Society, Vol. XIV, No. 2.—The Royal Geographical Society of London.

The Journal of the Royal Asiatic Society of Great Britain and Ireland, Vol. IV, part 2.—The Royal Asiatic Society of Great Britain and Ireland.

Bollettino della Societá Geographica Italiana, fas. 5.—The Italian Society of Geography.

Monatsbericht der Königlich Preussischen Akademie der Wissenschaften zu Berlin, Mai 1870.—The Royal German Academy of Sciences.

Verhandlungen der K. K. Geologischen Reichsanstalt, Nos. 10—17.—The Geological Institute of Vienna.

Jahrbuch der Kaiserlich-Königlichen Geologischen Reichsanstalt, Nos. 34,—The same.

The first Annual Report of the American Museum of Natural History, January 1870.—The American Museum of New York.

Original Sanscrit Texts, Vol. V, by Dr. J. Muir.—The author.

Main Results of the modern Vaidik Researches, by R. Ghosha. —THE AUTHOR.

Professional Papers of Indian Engineering, No. 28.—THE EDITOR.

Rámáyana, Vol. II, No. 3, edited by Hemachandra Bhattácharya.—THE EDITOR.

Memoirs on the History, Folk-lore, and Distribution of the races of the North-Western Provinces of India, by the late Sir H. Elliot. Edited by J. Beames Esq., C. S., 2 Vols.—LADY ELLIOT.

Sástra Prakásá, Kalki Purána, No. I.—KEDARANATHA BANERJI, PUBLISHER.

Archives Paléographiques de l'Orient et de l'Amérique par Léon de Rosny, parts 12.—MAISONNEUVE AND CO., PUBLISHERS.

Records of the Geological Survey of India, Vol. III. part 3.—THE SUPERINTENDENT, GEOLOGICAL SURVEY OF INDIA.

A classified Catalogue of Sanscrit works in the Sarasvati Bhándáram Mysore.—THE COMMISSIONER OF MYSORE.

Hunter's Comparative Dictionary, Part I.—THE GOV. OF INDIA.

Drury's Hand-book of the Indian Flora, 3. Vols.—THE SAME.

Selections from the Records of the Madras Government, No. 14; Survey and Settlement of the Chellumbrum and Manergoody Talooks, No. 15, Report on Public Instruction in the Madras Presidency for 1868-69.—THE SAME.

Report on Meteorology, Museum and Horticultural Gardens in the Province of Oudh, 1869-70.—THE SAME.

Report on the Administration of Civil and Criminal Justice, Oudh, 1869.—THE SAME.

Census of Oudh, 2 Vols.—THE SAME.

Sanitary and Vaccine Reports, Oudh, 1869.—THE SAME.

Dispensaries and Lunatic Asylum, Oudh, 1869.—THE SAME.

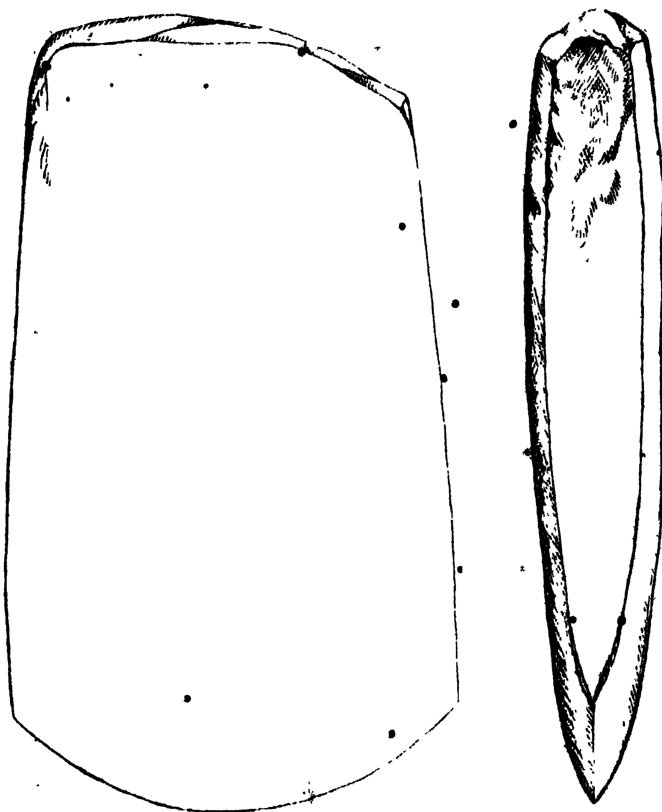
Progress of Education, Oudh, 1869.—THE SAME.

Purchase.

Conchologia Indica, by Hanley and Theobald Part 1:—Westminster Review, July:—Quarterly Review, July:—Revue des Deux Mondes, July:—Revue Archéologique, Juin:—Revue de Zoologie, Nos. 5 and 6:—The Annals and Magazine of Natural History, July:—The Philosophical Magazine, July:—Journal of the Statistical Society, June:—Comptes Rendus, Nos. 23—26:—Journal des Savants, May and June:—Zenker's Dictionary, part XV:—Böhtlingk's Dictionary, part 43:—Chronique de Tabari, 2nd Vol.—The Indian Medical Gazette, September:—Paspati's E'tudes sur les Tchinghianés ou Bohémiens de l'Empire Ottoman.

Exchange.

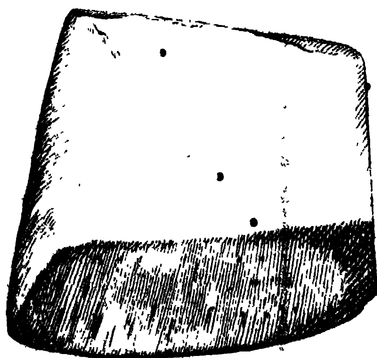
The Nature, Nos. 36—40:—The Athenæum, June.



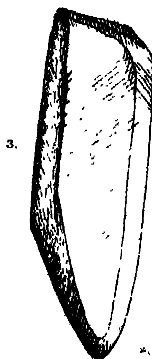
Celt found among the Namsang Nagas.







3.



Celts found among the Namsang Nagas.

PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL

FOR NOVEMBER, 1870.

A meeting* of the Society was held on Wednesday the 2nd instant, at 9 P. M.

T. Oldham, Esq., LL. D., Vice-President, in the chair.

The minutes of the last meeting were read and confirmed.

The following presentations were announced :—

1. From R. F. St. John, Esq., A note on the antiquities of Thatone.

2. From Capt. A. Bloomfield, Bálághát, six ancient copper coins.

They are old Hindu copper coins. On some of them the figure of an elephant may be seen. They are all square.

3. From Lieut. J. Butler, Commissioner, Naga Hills, A spear of an Angami Naga, a coat of the same, and a pair of ear ornaments.

The following gentleman is a candidate for ballot at the next meeting :—

A. Rogers, Esq., Solicitor, Calcutta, proposed by L. Schwendler, Esq., seconded by Col. H. Hyde.

The following gentlemen have intimated their desire to withdraw from the Society :—

Captain H. R. Thuillier, J. M. Ross, Esq., and C. Lazarus, Esq.

The following letters were read :—

1. From Fleetwood H. Pellew, Esq., on the 'Barisal Guns.'

'In regard to the "Barisal Guns," my notion was that waves of a

* There was no meeting on the first Wednesday in October, as the members present did not form a quorum.

length of a mile or two each, advancing obliquely from the S. S. W. would break successively on the coast from W. to E. To a person close by, the sound of each wave would be somewhat continuous; but to a person 40 or 50 miles off, if the wave broke simultaneously, the sound would be a boom like that of a gun, because both extremities of the wave would be nearly at the same distance from the hearer as the centre.

"I have at Pooree, when the S. W. Monsoon has lulled, seen far to the south a very lofty wave break with a distinct booming noise, a second or two after another nearer, then one opposite to me, and then others towards the north as far as one could see. Even to one standing on the beach, the noise of these waves (except the nearest) was so like that of guns that we used to remark on the resemblance. When the wind was blowing strongly, the wave was turned over by the force of it, before it attained its full height; but when there was no wind, or a slight breeze from the shore, whilst the swell was still high from the effect of the monsoon, this phenomenon often occurred, the wave rising to an immense height and breaking over a mile or two of beach at one moment.

'I may remark that the wind blows very obliquely on to the Pooree coast and would not take the sound so far inland as at Backergunge.

'The great difficulty about the Barisal guns arose from the fact that the Musalmans at Perijpore and round the Kocha River celebrate their marriages chiefly in September and always fire off earthen bomb shells, and it is almost impossible to tell the sound of these from the Barisal guns. I should never have believed in them at all, if I had not once, when in the Saplenja river in the Sundarban, with nothing but forest to my south, heard them distinctly on four or five different occasions in one night. Of course, we may have been mistaken, but the sound to our senses was undoubtedly from the south, and much louder than I ever heard it before. It woke me up from sleep, we were then about 30 miles from the coast.'

2. From H. J. Rainey, Esq., Zamindar Khulná, Jessore, on the same subject.

'One incident, and a prominent one too, I have, I find, inadvertently omitted to mention in my last letter, which is, that the direction of the sounds appears to travel invariably along the course of the streams that discharge themselves into the Bay. This circumstance I have carefully observed for a series of years, and hence I indicated the noises as coming from the sea-board; *e. g.* the sub-division of Khulná is situate on the confluence of the rivers Bhoirab and Rupsá (the latter a local name for the continuation of the Pasar), which run respectively N. and E. of it, and when I was residing there, I noticed that the sounds appeared to come from the S. E., while now that I am living across the Rupsá, on the west side of it, the noises are heard from the S. W. Again, I lived about a year at a place called Nali, *alias* Schillerganj, on the Baloswar River, and to the east of it, when the detonations, for such I may call them, were distinctly heard from the S. W. No European has, I believe, resided lower down the Baloswar River in the Sundarban than Schillerganj, which is distant about a tide only from the open sea, and the sounds heard by me there were decidedly louder than those I hear here, while below that place, and I have heard them very close to the sea, as far down the Huranghátá river as a boat could well venture out during the S. W. monsoon. They were audible with even still greater precision; but the reports were quite as distinct there from one another as they were elsewhere, which would not appear to bear out the surf theory or hypothesis originally propounded by Mr. Pellew, and which appears to have found much favour.'

3. From C. A. Elliott, Esq., *Offg. Secy. to the Govt. of the N. W. P.*

'I am directed to forward for the information of the Asiatic Society, copy of a Report dated 7th July, by the Civil Engineer of the Allahabad Circle, relative to the Monolith at Kosumbha in the Allahabad District.'

Report.

"I have the honor to report that in conformity with the orders of Government, dated 22nd April, 1870, I proceeded to "Kosim" on the 19th May, and under my personal supervision commenced the work of excavating the Monolith alluded to in

the above orders. The position and dimensions of the exposed portion of the shaft as I found it, has been so minutely and accurately described by Col. Cunningham in his report (*vide* Journal of the Asiatic Society, for 1865, Vol. 34, Part I.), that it needs no repetition at my hands.

"The small excavation made by Col. Cunningham and partially refilled by him was in the first instance cleared out and a more extended area subsequently embraced, so as to enable me to reach the bottom of the Monolith with the least possible amount of labour.

"The excavation was uninterruptedly carried down to the depth of 16 feet, exposing the shaft for a length of 26 feet from the top, but without exhibiting any appearance of approaching the base; at this depth, however, it became necessary to cut away a portion of the underlying bank against which the column rested, to admit of its circumference being accurately measured, and during this operation a joint running parallel with the axis of the shaft in the direction of its base was discovered on the underlying side; and as it was popularly believed and strongly asserted by a respectable body of natives collected on the spot that it was a secret recess concealing treasure, operations were suspended and circumstances verbally reported to you on the 25th May, together with my view of the matter, that it would most probably be found to be a piece let into the base of the Monolith, to replace a flaw in the original stone of which it was formed. But there being a possibility of doubt on the subject, Mr. Chalmers, Assistant Magistrate, was deputed to accompany me and witness the opening of the recess. However, owing to an unfortunate accident (my horse falling and rolling over me) I was unable to witness the further development of the Monolith, although I was in camp in the vicinity. The remainder of the operations was carried out under Mr. Chalmers' superintendence and the recess opened in his presence, and the supposed repository of treasure resulted, as I had anticipated, in being nothing more than a piece carefully let in to replace a flaw in the original stone. The piece measures 8 feet long, and is about ⅛ the area of the column at its base.

"Owing to the accident above mentioned and the intense heat of the weather, I was at this stage of the proceedings reluctantly

compelled to suspend work till the ensuing cold weather or until the receipt of further orders.

"The Monolith, as now exposed, measures from top to base 34 feet having a circumference of 7′ 10″ feet at top, and ten feet at bottom, which taken together with the two pieces lying in its vicinity gives a total length of 40′ 9″, and this in my opinion does not fully represent the full height of the original column, as the top portion exhibits a broken suface without a trace of the capital or any means of connecting it with the Monolith, had it ever existed even in a separate piece.

"Colonel Cunningham in his report is of opinion that the column retains its original position although overturned; the result of the excavations prove the contrary, as the lower portion of it was found imbedded in pure clay without a particle of brick or stone intermixed. I naturally expected to find some traces of a basement of some description, but all vestiges of brick and stone disappeared at the depth of 16 feet from the surface, the base of the Monolith resting in dark stiff clay; it is therefore my opinion that it has never been erected on the site it now occupies, and its original position will more likely be found amongst some one of the many very remarkable mounds surrounding it. On some of these the foundations of immense palatial buildings can be distinctly traced, and I would beg to suggest for the consideration of Government whether it might not be in the interest of Archeological science to have the more remarkable of them thoroughly examined during the next cold season.

"During the excavations no object of interest beyond the remarkably large bricks described by Col. Cunningham was discovered.

"In conclusion I may add that the cost of removing the Monolith into Allahabad will most probably fall very little short of Rs. 10,000. There being no road of any description between "Kosim" and "Serai Akil" (9 miles), a smooth track will have to be made over this portion, and from the latter place to Allahabad, several nullahs will have to be temporarily filled in, and the immense size of the column will require special contrivances for moving a weight of 15 tons (about) across country."

(Signed) H. K. Nesbitt, *Civil Engineer.*

In reply to a letter from the Secretary of the Society, regarding inscriptions on the Monolith, Mr. Nesbitt writes as follows :—

"In reply to your letter No. 533 of the 12th instant, I have much pleasure in informing you that there are many inscriptions on the "Kosim Monolith," and they are almost in as many various characters as there are inscriptions, the most remarkable and apparently the most ancient of them being of a peculiar shell-shaped pattern.

"I shall endeavour to procure the "rubbings" you require as soon as possible, but at present I am myself unable to get out to Kosim (30 miles), owing to press of work in the station.

"The Government having taken a favourable view of my suggestion to explore some of the most remarkable mounds alluded to in my report, I entertain hopes of making some interesting discoveries during the ensuing cold season. I may add that whilst excavating a tank a few miles from Kosim, two white marble figures in good preservation were discovered. One is called by the natives whom I consulted "Mahabeer," and the other "Nundhoa." They are now both deposited in the Allahabad Museum."

The President then exhibited two inscriptions received from Babu Rashbihari Bose, Banka.

The first inscription is taken from Col. Franklin's 'Inquiry concerning the site of Ancient Palibothra, Part II.' The second is a Bengali Inscription taken from a Hindu Temple on the Mondar Hill.

Bábu Rájendralála Mitra said, that not having Franklin's work at hand, he could not say whence the first inscription had been taken; but judging from its character and subject, he was satisfied that it was a Buddhist record, and commemorated the dedication of a statue or a chatya. The character was intermediate between the Gupta and the Kutila, and had been inscribed probably in the sixth century of the Christian era. The fifth letter of the third line was doubtful, so were the last two letters of the last line. He read the record as follows :—

परमभट्टार-
क महाराजाधिरा

ज श्रीउग्रभैर-
वस्य देयिच्चय—or देयधर्म्म

"The highly venerated, the great king, the king of kings Sri Ugrabhoirava + dedicated this."

The second inscription was from a modern temple on the Mondar Hill, built about 270 years ago, by a zemindar of Subbalpur. It was written in the old Bengali character of the Tirhut type and in the Sanskrit language. The temple was intended to supply the place of an older one, dedicated by a Chola Rájá, which, according to the local legend, had been demolished by Kálápahár, and the remains of which are still visible. The following are its transcript and translation:—

चन्द्रः पञ्च मनोजवाणधरणीत्यङ्काङ्किते वत्सरे
शाके पुण्यमहीतले द्विजवरे दुःशासने पर्जके ।
चक्रे श्रीमधुसूदनस्य विजयागार वरं निर्म्मलं
श्रीमच्छत्रपतिः सदाशुभमतिः श्रीवासुदेवात्मजः ॥
शाके १५२१.

"The well-disposed, and auspicious Chhatrapati, son of the auspicious Váisudeva, dedicated this pure and noble place of victory on earth for S'rí Madhusúdana, in the S'aka year 1521, when the noble Bráhmána Duhs'ásana was the officiating priest. S'aka 1521.— [A. D., 1597.]

The following papers were read—

I.—*On the Funeral Ceremonies of the Ancient Hindus.*—*By* BABU RA'JENDRALA'LA MITRA. (Abstract.)

The paper opens by adverting to two articles which have already been published on the subject, one by H. T. Colebrooke on the modern ritual, and the other by Max Müller on the ancient ritual; and then notices in detail the cremationary and sepulchral ceremonies described in the Aranyaka of the Black Yajur Veda. Some of the rites noticed are remarkable. The first ceremony was the removal of the dead from the house to the burning ground, and this was done on a cart drawn by two bullocks, or by aged slaves. The procession was headed by the eldest of the party, and included an old black cow. This

animal was sacrificed at the burning ground, and its fat, flesh, and organs were placed on the corpse, which was subsequently enveloped in the raw hide of the animal. The wife of the dead was made to lie by the corpse, and was thence removed by a younger brother, a fellow disciple, or a servant of the dead, who offered to marry her. The ceremony of burying the bones was performed on the 3rd, 5th, or 7th day; and on the 10th day the mourners assembled together, and after certain oblations, offerings, and prayers, raised a circle of stones, and then retired to the house of the chief mourner to feast on kid's flesh and barley.

The concluding portion of the paper is devoted to a consideration of the object and meaning of the mantra which was first quoted by Colebrooke as the Vedic authority for the performance of Suttee, and has since been frequently noticed. According to the Áranyaka, it should be recited when the women put on collyrium on the tenth day of the mourning, immediately before putting up the stone circle.

A conversation ensued in which most members took a part.

II.—*Coins of the Sharqí Kings of Jaunpúr.*—*By* REV. M. A. SHERRING, *Benares.*

Mr. Blochmann said—

The paper will shortly appear in the Journal. Mr. Sherring has not met with any silver or gold coins of the Sharqís, nor with copper coins prior to the reign of Ibráhím Sháh. The first Jaunpúr king, Malik Sarwar, Sultán ushsharq, does not appear to have struck coins; nor does he seem to have assumed the title of *Sháh.* The beginning of his reign is variously given in the Histories. Firishtah, who copied his extracts from the *Táríkh i Mubárak Sháhí*, gives 796 A. H., and makes him reign six years. The Áín has 16 years, which would remove his *julús* ten years earlier. The Lucknow Edition of Firishtah has 776, A. H. There are also slight discrepancies between Firishtah and the Áín in the length of the reigns of the other kings.

Mr. Sherring confirms Marsden's remark that the Jaunpúr coins exhibit the name of the Egyptian Khalífah Abulfath, who appears to have conferred the *taqlíd*, or right of sovereignty, on the Sharqís, long after the Khalífah's demise.

The most important point revealed by Mr. Sherring's paper is, that coins were struck in the name of Husain Sháh, the last Sharqí, long after 881, the year in which, according to the Muhammadan Historians, Jaunpúr lost its independence, and even after 905, the year in which Husain Sháh is said to have died.

Marsden also has a Husain Sháhí of 886, A. H.

III.—*Notes on the Bonhara Temple near Omarpore, Behar.*—*By* Babu Rashbihari Bose, Sub-Divisional Officer, Banka.

IV.—*An Account of Copilmoonee, Jessore, and its Antiquities, in connection with the Fair held there in March,* 1868.—*By* Babu Rashbihari Bose.

The Secretary read extracts from both papers, which will be published in the forthcoming number of the Journal. He said—

Babu Rashbihari Bose has since favoured the Society with an excellent facsimile of the inscription of the Bonhara Mosque. The inscription is in Arabic and runs as follows :—

قال النبي صلى الله عليه و سلم من بنى مسجدا لله بني الله له قصرا
مثله في الجنة * هذا المسجد الجامع للسلطان علاؤ الدنيا و الدين ابو المظفر
حسين شاه سلطان خلد الله ملكه و سلطانه في ذى القعده سنه (۹۰۸)
ثمان و تسعمائة *

'Thus says the Prophet (may God's blessing rest upon him !)—He who builds a mosque for God, shall have a castle like it built for him by God in Paradise. This is the Jámi' Masjid (erected) by Sulṭán 'Aláuddunyá wa-ldín Abul Muzaffar Husain Sháh, the King. May God perpetuate his reign! Zul Qa'dah 908, A. H.' [June, 1502, A. D.]

The inscription commences with a well-known passage from the Muhammadan Tradition, and is almost identical with the inscription on the Cheran Mosque published in our Proceedings for April, 1870 (p. 112). The characters being *Tughrá*, present considerable difficulties in deciphering. The Arabic inscriptions on the slabs which lie about in Tribení and Sátgáṇw are in the same character, and several of them belong to Husain Sháh.

'Aláuddín Husain Sháh reigned over Bengal from 1498 to 1521.

His numerous mosques, and the part which he plays in Bengal legends, have been referred to in the Proceedings for April.

The Cheran inscription and the inscription before the meeting are of historical interest. Bihár during the greater part of the 15th century formed part of the Sharqí kingdom of Jaunpúr. Husain Sháh, the last king of Jaunpúr, was deprived of his kingdom by Buhlúl and Sikandar Lodí, and Jaunpúr was reannexed to Dihlí, Husain Sháh taking refuge in Bihár, and ultimately in Bengal. He is said to have died in 905 A. H. (1499-1500, A. D.). The two inscriptions go to shew that Bihár was not annexed to Dihlí, but to Bengal, and thus confirm the histories.

The following communication was announced—

List of Reptilian Accessions to the Indian Museum, Calcutta, from 1865 *to* 1870, *with a description of some new species.—By* J. ANDERSON, ESQ., M. D., F. S., F. Z. S., *Curator, Indian Museum.*

LIBRARY.

The following additions have been made to the Library since the Meeting held in September last:—

Presentations.

Proceedings of the Royal Society, Vol. XVIII, No. 120.—THE ROYAL SOCIETY OF LONDON.

Proceedings of the Royal Geographical Society, Vol. XIV, No. 2.—THE ROYAL GEOGRAPHICAL SOCIETY OF LONDON.

The Journal of the Chemical Society, Vol. VIII, May, June, and July.—THE CHEMICAL SOCIETY OF LONDON.

Bulletin de la Société de Géographie, June, 1870.—THE GEOGRAPHICAL SOCIETY OF PARIS.

Journal Asiatique, No. 57.—THE ASIATIC SOCIETY OF PARIS.

The Journal of the Royal Asiatic Society, Vol. IV, Part 2.—THE ROYAL ASIATIC SOCIETY OF GREAT BRITAIN AND IRELAND.

Report by Baron von Richthofen on the Provinces of Hunan, Hupeh, Honan, and Shansi.—F. VON RICHTHOFEN.

Rámáyana, Vol. 2nd, No. 4, edited by Hemachandra Bhattáchárya.—THE EDITOR.

Jahresbericht des Physikalischen Central Observatoriums der Akademie für 1869, abgestattet von H. Wild, Director.—THE IMPERIAL ACADEMY OF SCIENCES, ST. PETERSBURG.

Anecdota Syriaca, collegit, edidit, explicuitque J. P. N. Land, Tom. III.—THE EDITOR.

The Central Provinces Gazetteer, ed. C. Grant, 2nd edition.—THE CHIEF COMMISSIONER, CENTRAL PROVINCES.

Selections from the Records of the Government of the N. W. Provinces, Vol. III, No. 4.—THE GOVERNMENT OF BENGAL.

The Annals of Indian Administration in 1868-69.—THE SAME.

Selections from the Records of the Bombay Government, No. CXVII.—THE SAME.

Report on the Charitable Dispensaries under the Government of Bengal for the year 1869.—THE SAME.

Exchange.

The Nature Nos. 41—48.

Purchase.

Journal des Savants, July 1870 :—Comptes Rendus, Tom. LXXI. Nos. 1-6 :—Revue Archéologique, No. VII :—Revue de Linguistique, Tom 4, fasc. I :—The Numismatic Chronicle, 1870, part II :—Otto Kistner's Buddha and his doctrines :—Max Müller's Outline Dictionary :—Asher's Study of Modern Languages :—Moffat's Standard Alphabet Problem :—Gray's Hand-List of Birds, part I :—Fergusson's History of Modern Architecture, Vol. III :—Wallace's Theory of Natural Selection.

PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL

FOR DECEMBER, 1870.

A meeting of the Society was held on Wednesday the 7th inst., at 9 o'clock P. M.

The Hon'ble Mr. Justice Phear, President, in the chair.

The minutes of the last meeting were read and confirmed.

Presentations were announced:

1. From Bábu Rádhicáprasáda Mukerjí—five copies of a plan of the Temple of Jagannath at Purí.

2. From W. Talbort, Esq.—a crystal head, a ring and a charm, and three earthen figures dug up at Dera Ismail Khan.

3. From Rev. J. Long—six Gujrati books.

4. From the author—a copy of Revision of the Mollusca of Massachusetts by W. H. Dall, Esq., and on the genus *Pompholyx* and its allies, with a revision of the *Limnæidæ* of authors, by W. H. Dall, Esq.

Mr. J. Wood Mason exhibited some cocoons of Hymenopterous insects *(Ichneumonidæ)*, found in a garden in the neighbourhood of Calcutta, and made some remarks on the habits of these insects.

Mr. Blochmann exhibited a silver coin, belonging to Mr. G. Nevill. He said, the coin was struck by an old king of Bengal, called Ghiásuddín Bahádur Sháh. It was described and figured in Mr. Thomas' Initial Coinage of Bengal (Journal, Asiatic Society, Bengal, 1867, p. 50, and Pl. I., No. 5); but specimens are rare.

Unfortunately the margin was cut away, and no trace was left of the date and the name of the mint.

A. Rogers, Esq., duly proposed and seconded at the last meeting were balloted for and elected an ordinary member.

The following gentlemen are candidates for ballot at the next meeting :—

F. C. Daukes, Esq., C. S., Mirzapúr, proposed by W. Oldham, LL. D., C. S., seconded by Mr. H. Blochmann.

R. S. Brough, Esq., Assistant Superintendent, Government Telegraph, Alipore, proposed by L. Schwendler, Esq., seconded by Mr. H. Blochmann.

Isaac Newton, Esq., Officiating Superintendent General of Vaccination, Panjáb, proposed by B. Smith Lyman, Esq., seconded by Dr. F. Stoliczka.

Bábu Ganendranátha Thákara, proposed by H. Blochmann, Esq., seconded by Dr. F. Stoliczka.

The following gentlemen have intimated their desire to withdraw from the Society :—

Capt. E. W. Trevor, C. Campbell, Esq., Lieut.-Col. Briggs, Lieut. J. Butler, Col. F. P. Layard, H. Reinhold, Esq.

The Council reported that on a recommendation of the Philological Committee they have sanctioned the publication of the following Sanscrit works in the Bib. Indica :—

1. Tatvachintámáni.
2. Aphorisms of Pingala.
3. Sulapáni.
4. Hemádri.
5. Tribháshyaratna.
6. Baudháyana Sútra.

The following letter regarding counterfeit coins has been received from Major F. W. Stubbs.

Attock, 19*th November*, 1870.

" It is not often probably that one meets with a counterfeit gold mohur of obsolete Muhammadan mintages, and therefore it is as well to be on one's guard against such forgeries. Accordingly I send you the following description of one brought me a day or two

ago, clearly a *die-struck* imitation of the rupee of Ghiásuddín Tughluq Sháh, described as No. 78, page 47, Thomas's Coins of the Patan Sultáns of Hindústán. Were it not for the mistakes made by the engraver of the die, I do not think it would have been possible to have detected the forgery.

The legends were as follows :—

Obv. Al-Sultán al Ghází Ghiás ud dunyá wa-l dín Abul-Muzaffar.

Rev. Tughluq Sháh al-Sultán *námín* (السلطان نامين) amír ul múminín ٧٢٩

Margin. hazihi-l-sikkah ba Hazrat Dihlí fi sanat tis'a wa 'ishrín wa sab'a iat—

in which the six mistakes are evident :—

1. *Námín* instead of *náçir*.
2. Date in figures impossible.
3. Difference of dates in words and figures.
4. The word *zuriba* omitted.
5. *M* of *miat* omitted.
6. The usual forms of the letters *alif*, *lám*, *ṭoe*, had thick clavate shapes: in this coin they have the more elegant form, first introduced on his coins by Sher Shah.

I had a gold mohur of this king of the type described at page 7 of the Supplement to Thomas' Patan Coins with a legend similar to No. 76 of his series, (but perhaps not the same mint), which I consider to be a cast; but Colonel Guthrie, in whose possession it now is, thinks it genuine. Both came from the same place, Rawal Pindee, a nest of coiners. This notice may be of use to collectors."

The following papers were laid before the meeting :—

I. *Descriptions of the species of Alycæinæ, known to inhabit the Khasi Hill ranges*, by Major H. H. Godwin-Austen, F. R. G. S.,

Major Godwin-Austen's recent researches in the Khasi hills have increased the number of species of *Alycæi* from those hills to 16, of which 7 are new, and of several species, previously described, interesting varieties have been noticed. The present list does not include all the species from the Assam valley. Beautifully executed figures accompany the descriptions.

II. *On some undescribed species of Camptoceras, and other land-shells*, by H. F. Blanford, Esq.

In addition to the only known species of the interesting genus *Camptoceras* (*C. terebra*, Bens.), Mr. Blanford describes two others, lately discovered by Major Godwin-Austen in the Mymensingh jheels. Besides these the author describes one *Alycœus*, one *Diplommatina*, two *Glessulæ* and two species of *Helicarion*, all from Darjeeling.

III. *On some new or imperfectly known Indian Plants*, by S. Kurz, Esq.

This is a continuation of Mr. Kurz's very valuable notes on various Indian plants (including those from Burma and the Malay Archipelago), published in our Journal for this year. The present paper contains a large number of new species described from Burma, chiefly from the collection of Dr. Brandis.

IV. *Note on Onchidium verruculatum*, Cuv., *from Ceylon*, by H. Nevill, Esq., C. S., Ceylon.

Animal ovoid, thick, solid, roughly tuberculated, especially down the centre of the back; tubercles irregular, very retractile; dotted at times with cells or points; sometimes elevated, containing a black matter, occasionally dendritically filamented on the posterior slope. Mantle, above, dark olive, rough, thickened; beneath, yellowish at the outer edge, shading into dark olive grey at the junction with the foot. Foot pale greenish white, soft, semi-pellucid. Tentacles grey; head and its appendages very dark above.

Length 2 inches, breadth 1½ inches, height in centre 1 inch.

This species was originally described and figured in Napoleon's 'Expedition to Egypt' under the name of *Onchidium Peronii*, a Mauritian species. Cuvier subsequently called the Red sea form *O. verruculatum*, and it is interesting to find it in Ceylon.

It has been considered to represent one of the typical species of *Peronia*, but it has afforded a singular confirmation of the views expressed by Dr. Stoliczka in the Journ. As. Soc. Beng. Vol. XXXVIII, Part II, No. II, 1869, where, after an account of the anatomy of the genus, he proceeds, (page 99,) to show the probable identity of the so-called genera *Onchidium*, *Onchidiella*, and *Peronia* " It would appear from the evidence brought forward there, that the only true grounds for separation of *Onchidium* and *Peronia*

are the filamentous appendages to the mantle of the latter; intermediate forms appearing unknown.

Now the present species presents at certain times these filaments developed from its mantle; and also presents on those parts of its body where the tubercles want these filaments, the singular black "cells of pigment," noticed by Dr. Stoliczka.

A careful examination of several living specimens has afforded me the following additional data on the subject:

That in the present species, the tubercles, when plain, are studded with black points, in varying number.

That when the tubercles develop filaments, these occur similarly to the black points.

That the black points sometimes show a tendency to become raised on stalks.

That the filaments disappear in confinement, or in alcohol; and that they only occur partially, and in some specimens only, while others at the same locality and season want them.

Not being able to keep vivaria I have not ascertained whether the filaments disappear permanently or temporarily, how they so disappear and whether they are replaced by black points; but I think enough is noted to establish the fact that the black points or cells become developed at seasons, or in specimens, into filaments; and thence *Peronia* cannot be separated from *Onchidium*, unless on characters distinct from those already quoted.

V. *Extracts from a Diary written on the occasion of a visit to K'harakpúr and Munghír.* By BA'BU RASHBEHA'RY BOSE.

Several extracts from the paper were read referring to the Mosque of Lak'hinpúr, the conversion to Islám of one of the Rájahs of Kharakpúr, and the legend of the Five Virgins who threw themselves from the hill, which in remembrance of them is called 'Pánch Kumári.'

The paper will be published in the first number of the Journal for next year.

Mr. Blochmann said—I have collected from Mughul Historians a few notes on the History of the Rájahs of Kharakpúr. Kharakpúr is the name of an old town and Parganah, south of Mungér

(Monghyr). The river Mán traverses the district and flows east of Mungér into the Ganges.

At the time of the conquest of Bihár and Bengal by Akbar, (A. D. 1574-75), there were in Bihár three powerful Zamíndárs—Rájah Gajpatí of Hájípúr (Patna), Rájah Púran Mall of Gídhor (S. W. of Kharakpúr), and Rájah Singrám of Kharakpúr. Gajpatí was totally ruined by the Imperialists whom he opposed; but Púran Mall and Singrám wisely submitted and assisted Akbar's generals in the wars with the Afgháns. When the great Mutiny of Bihár and Bengal broke out, Singrám, though not perhaps very openly, joined the rebels, but submitted again to the Mughuls, when Akbar's general Shahbáz Khán marched against him. He was so anxious to avoid coming in open contact with Akbar, that he handed over to Shahbáz the strong fort of Mahdá.* But he never paid his respects personally at Court, where his son, apparently as hostage, was detained, and remained submissive till Akbar's death (1605). The accession of Jahángír and the rebellion of Prince Khusrau inclined him to make a final attempt to recover his independence and to collect his forces which, according to Jahángír's Memoirs, consisted of about 4000 horse, and a large army of foot-soldiers. Jahángír Qulí Khán Lálah Beg, governor of Bihár, lost no time in opposing him, and Singrám whilst defending himself, was killed by a gunshot (1606).

Singrám's son, whom Jahángír calls a favourite of his, was not immediately installed on his father's death; but had to wait till 1615, when on his conversion to Islám he was allowed to return to Bihár. Like several Rájahs, he retained after his conversion the title of his ancestors, and is known in Muhammadan histories as *Rájah Rozafzún.*† He remained devoted to the service of the emperor, and was in 1628, when Jahángír died, a Commander of 1500 (brevet rank), and 700 horse.

On Sháhjahán's accession (1628), Rájah Rozafzún entered active service. He accompanied Mahábat Khán to Kábul in the war with Nazr Muhammad Khán, king of Balkh, and served later in the expedition against Jhujhár Singh Bundelah. In the 6th year of Sháh-

* *Mahdá*, مهدا. I cannot find the fort on the maps.

† *Roz-afzún*, daily increasing, growing in power.

jahán's reign he served under Prince Shujá' in the siege of Parendah, and was promoted in the beginning of the 8th year (1044 A. H., or A. D. 1634-35) to a Command of 2000 (brevet), 1000 horse. (*Pádisháhn.*, I., *b.*, 67). He died soon after in the same year.

His son was Rájah Bihrúz.* He served in the siege of Qandahár, and was in the 30th year of Sháhjahán's reign a Commander of 700, with 700 horse. In the beginning af Aurangzíb's reign, he assisted the emperor against Prince Shujá', and in the (second) conquest of Palámau in 1072, or A. D. 1661.

Rájah Bihrúz died four years later, in the 8th year of Aurangzíb's reign.

He is evidently the Rájah whom Bábu Rashbihary Bose calls *Rajah Beroje.*

On referring to the Survey maps, I find in the Parganah Sikharábádí, which forms the Eastern boundary of Kharakpúr, two villages of the name of Bihrúzpúr, evidently so called in memory of Rájah Bihrúz.

The story of the Lak'hinpúr saint whose tooth-pick shot forth green branches, resembles that of Sayyid Sháh 'Abdullah Kirmání of Bírbhúm. Sháh 'Abdullah left, it is said, when young, Kirmán in Persia, his native country, and visited Sháh Arzání, at whose request he went to Bengal. On departure, Sháh Arzání, gave him a tooth-pick of chambelí wood, and told him to remain at that place where the tooth-pick would become fresh and green. Sháh 'Abdullah arrived in Bírbhúm, and stayed at Bargáon, near Bhadia, where he performed several miracles (*karámát).* But as the tooth-pick remained dry, he went to Khushtigrí, another village in Bírbhúm. One night he put the tooth-pick into his pillow, and awaking he found it was fresh and green. He then planted it, and it soon became a large tree, which is still seen.

Sháh 'Abdullah is especially renowned for the power which he had over serpents, and now-a-days in Bírbhúm his name is repeated in formulas of enchantment. His *dargáh* is in the hands of his descendants, and is visited by numerous pilgrims.

Sháh 'Arzání, whom I mentioned, is a Muhammedan saint who died during the reign of Sháh Jahán at Patna, in A. H. 1040, or 1630.

* *Bihrúz*, literally a man whose day is good.

Library.

The following additions have been made to the Library since the meeting held in November last.

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*** Names of Donors in Capitals.

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१४८५	योगानुशासनं	.. .. ..	ना	योगशास्त्रं	४२
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APPENDICES.

APPENDIX A.

List of papers submitted to the Society during the year 1870, with dates when they were received, and how they were disposed of.*

[* Short communications and abstracts, chiefly printed in full in the Proceedings are not included in this list, but referred to in the general Index.]

Authors.	Titles of Papers.	When received.	How disposed of.
Avdall, J., Esq.	A covenant of Ali, fourth Caliph of Baghdád,	23rd Sept., 1870.	Printed in Journal, Pt. I, for 1870, p. 60.
Anderson, J., Esq., M. D.	List of Reptilian accessions to the Indian Museum, Calcutta from 1865 to 1870, with a description of some new species,	28th Oct. 1870.	To be printed in Journal Pt. II, for 1871.
Ball, V., Esq., B. A.	Notes on the Geology of the Vicinity of Port Blair, Andaman Islands,	3rd Mar., 1870.	Printed in Journal Pt. II, for 1870, p. 231.
Ditto ditto,	Notes on Birds observed in the neighbourhood of Port Blair, Andaman Islands, during the month of August 1869,	2nd Mar., 1870.	Printed in Journal Pt. II, for 1870, p. 240.
Ditto ditto,	Brief Notes on the Geology and on the Fauna in the neighbourhood of Nancowry Harbour, Nicobar Islands,	20th Oct., 1869.	Printed in Journal Pt. II, for 1870, p. 25.
Bayley, E. C., Esq., C. S., C. S. I.	Memorandum on and tentative reading of the Súe Vihár Inscription from near Bháwalpúr,	....	Printed in Journal Pt. I, for 1870, p. 65.

Blanford, H. F. Esq.,	On certain protracted irregularities of Atmospheric pressure in Bengal, in relation to the Monsoon rainfall of 1868-69,	17th Feb. 1870.	Printed in Journal for 1870, Pt. II, p. 123.
Ditto ditto,	On the Normal Rainfall of Bengal,	27th May, 1870.	Printed in Journal for 1870, Pt. II, p. 243.
Ditto ditto,	On some undescribed species of Comptoceras and other land shells,	2nd Dec. 1870.	To be printed in Journal for 1871, Pt. II.
Blanford, W. T., Esq.	Contributions to Indian Malacology No. XI, Descriptions of new species of Paludomus, Cremnoconchus, Cyclostoma and Helicidæ from various parts of India,	25th June 1870.	Printed in Journal for 1870, Pt. II, p. 9.
Ditto ditto,	Notes on some Reptilia and Amphibia in Central India,	2nd Aug. 1870.	Printed in Journal for 1870, Pt. II, p. 335.
Busteed, Dr. H. E.	On the Method of assaying silver as conducted in the Indian Mints,	7th Sep. 1870.	Printed in Journal for 1870, Pt. II, p. 377.
Chandrasékhara Bánurji,	Notes on the Antiquities of the Nalti, the Assi and the Mahabináyaka hills of Cuttack,	3rd Aug. 1870.	Printed in Journal for 1870, Pt. I, p. 158.
Day, Surgeon F.	Notes on the genus Hara,	10th Feb. 1870.	Printed in Journal for 1870, Pt. II, p. 37.
Dawson, The Rev. J.	Gondi Words and Phrases,	7th June 1870	Printed in Journal for 1870, Pt. I, p. 108.

Authors.	Titles of papers.	When received.	How disposed of.
Dawson, The Rev. J.......	Additional Gondi Vocabulary, ...	7th June 1870.	Printed in Journal for 1870, Pt. I, p. 172.
Dalmerick, J. G., Esq.	Notes on Archæological Remains at Sháh ki Dheri, and the site of the ancient city of Taxila,....................	18th April 1870.	Printed in Journal for 1870, Pt. I, p. 89.
Elmslie, W. J., Esq., M. D.	List of words and phrases to be noted and used as test words for the discovery of the radical affinities of languages and for easy comparison, drawn up by Mr. Justice Campbell, ...	....	Printed in Journal for 1870, Pt. I, p. 95.
Foulkes, The Rev. T.......	Notes on Three copper Sasanams, discovered in the Vizagapatam District, ..	3rd Aug. 1870.	Printed in Journal for 1870, p. 153.
Fuller, Major A. R. (late),	Translation from the Tarikh Firuz Shahi,	....	Printed in Journal for 1870, Pt. I, p. 1, continued from No. 4 of Journal, Pt. I, for 1869.
Godwin-Austen, Major H H................	List of Birds obtained in the Khasia and North Cachar hills, ...	1st Jan. 1870.	Printed in Journal for 1870, Pt. II, p. 91.

Ditto ditto, ...	Second List of Birds obtained in the Khasi and North Cachar Hill ranges, including the Garo Hills and country at their base in the Mymensing and Sylhet Districts, ...	23rd June 1870.	Printed in Journal for 1870, Pt. II, p. 264.
Ditto ditto, ...	Description of the species of Alycæinæ known to inhabit the Khasi Hill ranges,	2nd Dec. 1870.	To be printed in Journal, Pt. II, for 1871.
Growse, F S., Esq., C. S...	Rejoinder to Mr. Beames, ...	....	Printed in Journal for 1870, Pt. I, p. 52.
Hume, Allan O., Esq., C. B.	Additional Observations regarding some species of Birds noticed by Mr. W. T. Blanford in his "Ornithological Notes from Southern, Western and Central India,"	11th Jan. 1870.	Printed in Journal for 1870, Pt. II, p. 113.
Kurz, S., Esq.............	Gentziana Jæschkei re-established as a new genus of Gentzianaceæ, ...	6th April 1870.	Printed in Journal for 1870, Pt. II, p. 229.
Ditto ditto, ...	On some new or imperfectly known Indian plants, ...	2nd Dec. 1870.	To be printed in Journal Pt. II, for 1871.
Michell, R., Esq., F. R. G. S.	Statistical Data on the Area of Asiatic Russia compiled by Mr. W. Venuikof; translated from No. III 1865, of the Notes of the Imperial Russian Geographical Society, ...	13th Feb. 1870.	Printed in Journal for 1870, Pt. II, p. 41.

Authors.	Titles of papers.	When received.	How disposed of.
Nevill, G., Esq.	Land shells of Bourbon with descriptions of new species, ...	7th Sept. 1870.	Printed in Journal for 1870, Pt. II, p. 403.
Nevill G. and H., Messrs. .	Descriptions of new species of Mollusca from Ceylon, ...	7th Sept. 1870.	To be printed in Journal, Pt. II, for 1870.
Phayre, Col. Sir A.	Note on a Circle of Stones situated in the District of Eusufzye,................	....	Printed in Journal for 1370, Pt. I, No. 1, 1870, p. 58.
Pratápachandra Ghosha, Babu, B. A.............	Contributions towards Vernacular Lexicography, No. 1,.....................	19th May 1870.	Printed in Journal for 1870, Pt. I, p. 131.
Ditto ditto, ...	The Vastu Yagá and its bearings upon Tree and Serpent worship in India,....	29th July 1870.	Printed in Journal for 1870, Pt. I, p. 199.
Rashbihari Bose, Bábu, ..	Notes on the Bōnhara Temple near Omarpore, Behar, ...	....	Printed in Journal for 1870, Pt 1, No. 3, 1870, p. 232.
Ditto ditto, ...	An account of Copilmoonee, Jessore and its antiquities in connection with the Fair held there in March 1868, ...	....	Printed in Journal for 1870, Pt. I. p. 235.

Ditto ditto, ...	Extracts from a diary written on the occasion of a Visit to Khorucpur, Mungir, ..	22nd Nov. 1870.	To be printed in Journal for 1870, Pt. I.
Rajendralála Mitra, Bábu,	Notes on Sanskrit Inscriptions from Mathura, ...	2nd Sept. 1870.	Printed in Journal for 1870, Pt. I, p. 117.
Ditto ditto, ...	On the Funeral Ceremonies of the ancient Hindus, ...	2nd Nov. 1870.	Printed in Journal for 1870, Pt. I.
Stoliczka, Dr. F.	Observations on some Indian and Malayan Amphibia and Reptilia, ...	6th April 1870.	Printed in Journal for 1870, Pt. II, pp. 134, 159.
Ditto ditto, ...	Note on the Kjökkenmöddings of the Andaman Islands, ...	5th Jan. 1870.	Printed in Proceedings for January, 1870.
Ditto ditto, ...	A Contribution to Malayan Ornithology,	6th July 1870.	Printed in Journal for 1870, Pt. II, p. 277.
Theobald, W., Esq.	Descriptions of New Land shells from the Shan States and Pegu, ...	7th Sept. 1870.	Printed in Journal for 1870, Pt. II, p. 395.
Tremlett, J. D., Esq.	Notes on old Delhi, ...	12th Mar. 1870.	Printed in Journal for 1870, Pt. I, p. 70.

APPENDIX B.

List of Donations (not including Books, or other publications, and MSS., these being acknowledged in the monthly library lists).

[Objects marked with an asterisk have been transferred to the Trustees of the Indian Museum].

Donors.	Donations.
Bloomfield, A., Esq.	*Eight pieces of silver and seventeen pieces of copper utensils found near the village Gungeria.
Bloomfield Captain, A.,.........	Six ancient copper coins.
Butler, Lieut. J.	A spear of an Angami Naga, a coat of the same, and a pair of ear ornaments.
Chandrasikhara Banerji, Babu,	*A rectangular piece of garnetiferous gneiss with the Buddhist formula "Ye Dhammahétu, &c. &c. &c., found in the Alti Hills.
Committee of Grote Portrait Fund	A portrait of A. Grote, Esq., C. S.
Delmerick, J. G., Esq.	*A number of Buddhist heads and stone tablets with figures from near Peshawar.
Ditto ditto, ...	Specimens of moulds used in counterfeiting coins.
Ferrar, M. L., Esq., C. S.......	Copper coins dug up near Partabgarh.
Gastrell, Col. J. E.............	*A specimen of Macrocheira Kaempferi from Japan and a specimen of a large Ostrea.
Hexter, H. Esq................	*A specimen of Chamæleo vulgaris from Bughodeer.
Rainey, H. J., Esq.	Two modern copper coins bearing the inscription "Island of Sultana" in English, and the coat of arms of the E. I. Company.
Saxton, Col., G. H.	*A set of Iron implements &c. found in a cromlech on the Nilgiris.
Stoney, R. V., Esq.	*A piece of a calcareous tuffa taken out of a Sisú tree near Cuttack.

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